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AND AMERICAN GARDENER'S MAGAZINE.

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ORIGINAL COMMUNICATIONS.

Manufacture of Silk—Gay and Bottum's Silk Apparatus. By the Editor.

Among the pleasing objects to be seen in the picture of our country, which is to be drawn some ten or fifteen years hence, will be the creeping and voracious silk worm,—pleasing, because the emblem of so much prosperity, and the source of so much earthly happiness. It will, in the language of the eye, say that the stony fields and the river bottoms of industrious New-England are inclosed by the bright-leaved mulberry—that the blooming fair in the land of steady habits are plucking the leafy food, feeding myriads of nature's humble and hungry offspring, and unwinding the glossy fibre that is to clothe and bring food to thousands and thousands of worthy families—that emulous New-York and Pennsylvania, and the youthful and vigorous West, are adding the important labors of the silk-worm to their already numerous and augmented resources,—and that the generous and high-minded South, seeing that industry and enterprise avail more than murmurings in averting the evils of the tariff, are introducing this and other abundant sources of wealth, for which their climate, soil, and internal resources afford many facilities.

From all we have seen and learned, we cannot resist the conclusion that this country will rapidly progress in the manufacture of silk until its own wants are supplied, and perhaps until it finds itself in a condition to compete with other countries to supply the markets of the world. In the northern, middle, western, and southern States, extensive preparations are being made, not only for the growth of the mulberry, but for manufacturing the silk, particularly in some of the New-England States. Of this progress our future pages will give an account.

Messrs. Gay & Bottum, of Lisbon, Ct., recently exhibited in this city their apparatus for the manufacture of this article. It was kept in active operation, and consisted of a reel for winding the silk from the cocoon, a winding frame for winding it from the hanks on to spools, or bobbins, a twisting or throwsting machine for doubling and twisting it on to other bobbins, and two looms for weaving. The whole apparatus would occupy a space of twenty feet square, and was made principally of iron, and in the most durable and finished manner. We took down a few notes, which we lay before our readers in the order they were taken.

The reel, which is on the principle of that of G. B. Smith, of Baltimore, consists of a wooden frame, and wheels of polished iron and brass. It is a very compact and simple machine, doing the work in the most perfect manner. The price of it is fifty dollars; and Mr. Gay thinks the part on which the silk is wound should be made of metal, to preserve the fibres or threads of the same tension until they become dry. This makes the thread smooth, and less liable to be fritted in the wear. If made of wood, he says the moisture of the silk will cause that part in contact with it to swell and shrink, and thus injure the thread. We should suppose, however, that glass, or thin pieces of metal fastened on the wood, would answer every purpose, and enable him to manufacture them at near one third the price.

On the supposition that the apparatus is moved with water or horse power, for which it is designed, one female will reel one pound of raw silk for weaving, and one and a half or two pounds for sewing. For a hand reel, two females are required to do this quantity. One bushel of cocoons will make one and a quarter pounds of merchantable raw silk, and two ounces of floss silk.

The diameter of the winding part of Mr. Gay's reel is not sufficiently large. The larger it is the faster can the silk be reeled. One of these reels will reel for a whole neighborhood, and enable silk growers to produce raw silk that will command from $4 to $5.50 per pound.

The silk is taken from the reel and put on the winding frame, which winds, twists, and, if necessary, doubles the thread at the same operation. One female, on the above supposition that the apparatus is moved by other power, will wind and double two pounds from thirty bobbins in a day. This is for warp—a greater quantity for filling.

The spools are taken from the winding frame and put on the twisting or throwsting machine. One female will attend 30 to 50 spindles, producing about one and a half pounds of weaving silk, and two for sewing. After this operation the silk is cleaned by boiling in soap suds about two hours—20 lbs. of soap to 100 lbs. of silk. It is now colored, which is done in New-England principally with vegetable substances, almost entirely of the growth of this country. The silk is superior to that of foreign countries, in the durability of both color and wear. An elderly lady of Lisbon, Ct. has a piece of American silk of lead color, which has been lying about the house for more than twenty years; it is still unfaded and unchanged.

The next operation is weaving on a hand loom. A weaver, often a female, will produce per day five to six yards of thick vesting, or gros de Naples. Of thinner silks, six to ten yards can be woven. The specimens that we saw were very thick and strong, and were worth three dollars per yard.

Although silk has been manufactured in this country for more than fifty years, yet Mr. Bottum, who has given his attention to it for thirty years, informs us that there are not cocoons raised in the country sufficient to keep three hand looms in operation. If more cocoons were raised, there would be a better market, although they now command from three to three and a half dollars per bushel, of good quality. A farmer can raise one bushel for two dollars, if he hires all the labor. An orchard will let out for half or more of the cocoons produced. A gentleman in Hartford lets out his orchard for two-thirds. One acre of the white mulberry will produce forty pounds of raw silk. Dr. Henry Holmes, of Hartford, says from fifty to a hundred pounds. Mr. Butler, of New-York, calculates the new Chinese mulberry, Morus multicaulis, will produce one hundred pounds. Mr. B. has 100,000 of these plants.

When the cocoons are first finished by the worms, they are put in shallow baskets, covered with paper, and dried in an oven moderately heated. When taken from the oven the baskets should remain covered until the cocoons become cool, and then they are spread to dry. If they are not immediately spun, they should be put in cotton bags, with a little tobacco sprinkled among them to keep out moths.

Cocoons before they are wound should be sorted into three qualities: poor, or first sort, for sewing silk, will command $4 per pound; next, of fair quality, worth $4.50; best, worth $5 to $5.50, when wound.

American raw silk thus prepared is superior to that of foreign countries, and will command a better price. Mr. Bottum has for two years past bought all American raw silk he could obtain. But on account of the scarcity of the article, he has been obliged to depend principally on imported silk to keep his weaving in operation. He depends on the females of our own country for all the operations except that of weaving; and for this cotton weavers will supply every demand. Much loss and much discouragement have been met with, by depending on foreigners. Mr. B. has used raw silk from Bengal, Canton, and Italy, and he prefers American silk, at 10 per cent higher price. It is brighter, softer, and stronger, by 25 per cent. The Italian is next best for softness.

The whole apparatus exhibited by Messrs. Gay & Bottum is principally made of iron, finished in a superior style, and cost about $1000. The greater part of it would last for a century. They will exhibit it in New-Haven, on the 15th of May, before the members of the Legislature of Connecticut. They intend also to exhibit it at the Fair of the American Institute in this city, in October next. As soon as it can conveniently be made, a reel will be exhibited at the Agricultural Warehouse, 81 Barclay street. The improvements in the machinery are the result of eighteen years of experiment and experience. Independent of the weaving part, or looms, two hands are required for the moving power. Horse or other power will be requisite in producing work in factories.

Planting Embankments of Railroads with Mulberry for Silk Establishments. By E. Sayres. [For the New-York Farmer.]

Mr. Fleet,—I have at different times noticed railroads, especially the Schenectady railroad, much injured where the embankments have been made, by frost and rain, by the earth slipping in large bodies after the winter season. This I think might be greatly obviated by planting the embankments with some hardy plant, that would root into and connect the soil together on the outer surface, so far as the frost generally enters. The white mulberry, or the Chinese *Morus multicaulis*, is perhaps deserving a trial for this purpose. The plant is hardy, and grows on a sandy soil, which is generally to be found on railroads. It roots deep, and is very fibrous, which would net the soil together, as it were. There is also another consideration which might be taken into the account, viz., the formation of a silk establishment, which under such auspices might be carried on advantageously and extensively. I hope this will bear the consideration of some abler pen. Many hundred thousand trees may be planted in this way on an extensive railroad. The trees might be planted a yard apart each way, and headed down every spring to 18 inches, by which young wood would be obtained, and the plants would be very convenient to pick the leaves. This method would give almost any required quantity of leaves to carry on an extensive establishment. The leaves could easily be conveyed to some central place by the cars for the worms, and the silk when manufactured might also be conveyed in the same manner to a market, or to places of conveyance thither.

In conclusion, I have some reason to believe, were this method to be adopted, that the appearance of the embankments would present a very interesting scene to the traveller, and the surrounding country. Comfort would also be something in favor, as the dust that often annoys the traveller would be allayed by this planting, and, I trust, were it once adopted, it would become general in most parts where railroads are formed.

Much more might be said on the subject, which I leave for a more able pen.

With respect, &c.

Edward Sayres.

Hyde Park.

Agricultural Circulating Library. By S. P. G. [For the New-York Farmer.]

Mr. Fleet,—Notwithstanding many departments of science are aided by the modern and cheap plan of circulating libraries, yet agriculture, which is and ought to be a science, is not as yet benefitted by this plan, although there are many agricultural publications that are judiciously conducted; yet the expense of them does in some degree forbid their free circulation, as they would be if they were brought into the library plan. By this plan, old and new foreign and domestic publications might be republished. Geological works, and those on natural history, and many other valuable books of this character, could be brought within the reach of almost every industrious farmer. There are but few intelligent and enterprising farmers that would be unwilling to be benefitted by an agricultural circulating library, conducted upon scientific and practical principles, embracing all the agricultural knowledge attainable. Knowledge is power, and when the farmer has this in his hands, he needs only enterprize to be benefitted by it. When we farmers shall see an agricultural library in circulation, we shall see an era in the prosperity of our beloved country as we now do in the literary department, caused by the diffusion of knowledge through the medium above alluded to.

S. P. G * * * * *.

Rensselaerville, March, 1834.

Nature's God. By S. P. G. [For the New-York Farmer.]

Who is the author of that great and sublime Book of Nature? Ah, it is Nature's God!

> A glory gilds each sacred page,
> Majestic like the sun,
> It gives a light to every age,
> It gives, but borrows none.

It is the omnipotent, the self-existent Being, who can know neither infancy nor age. It is the self-same hand that formed each twinkling star, that runs its ample rounds in the regions of illimitable space. His omnipotent hand is seen not only in the movement of ten thousand times ten thousand worlds, but in sustaining each grain of sand. He weigheth the hills and the mountains in scales, and meeteth the oceans in the hollow of his hand. In his sight this mighty globe with the whole burden of its population is but a grain of sand on the high field of immensity. Yet not a sparrow falls to the ground without His notice, and the hairs of our head are all numbered. In the leaves of every forest, and in the flowers of every garden, and in the waters of every rivulet, there are worlds teeming with life, and as numberless as are the glories of the firmament that sweep immeasurably along, and carry their impress of the Almighty hand to the remotest scenes of the universe. Nature presents an inexhaustible fund of rational and instructive amusement to the mind. How instructive and pleasing to contemplate the inimitable work of nature's God! Each department of nature affords an abundance of entertaining ideas, equally calculated to raise in the soul most exalted views of his character and attributes.

The gaiety of spring, the smiles of summer, the fecundity of autumn, and the dreariness of winter, all combine to celebrate the Author of universal existence. What, can there be a more delightful theme for contemplation than the beautiful works of nature? It was this that filled the soul of Hervey, and caused him to burst forth in flames of love and eloquence; and it is this that attuned the notes of nature's songsters to warble forth their melodious notes of praise, to cheer the industrious tiller of the ground. When spring returns with all its beauty, as succeeding the gloomy aspect and forbidding horrors of winter—when the meek-eyed damsel, Flora, bursts her melting bands of ice and frost, and springs forth with all her matchless splendor and magnificence, decked in her robe of velvet green, and every variegated hue, shining with all her pristine elegance and enchanting attraction—will not this swell the heart of man with gratitude, and fill the soul of God's first and best gift to man with ecstatic joy and praise to Nature's God.

By the helping hand of science man can carry his investigation below the surface of the mighty deep—can examine the curious shells, the rich coral, and the priceless pearl, and with the persevering and penetrating eye of genius, can discern beneath the waters a world as splendid and as beautiful as on *terra firma* itself. On the wings of science he can mount into the high regions of the air, and trace out the causes of those phenomena which in all ages have delighted, astonished, and terrified man. What a world of wonders! What stupendous magnificence! —well calculated to elevate the soul above the little interests of this world, and place it upon objects more worthy the attention of an immortal mind. S. P. G * * * * *.

Sulphur and Iron.—*Mr. Fleet:* I took a bar of Crawley steel, heat it red hot, took a lump of roll brimstone, and put the red hot steel against it. The steel melted like tallow, but its malleability was easily reduced to powder. Again, one of my neighbors having a deficient melt of potash, and wishing to burn out what he called the nitre, dropped in a lump of brimstone as large as a musket ball; the brimstone went instantly through the kettle, let out all the potash, and ruined the kettle. I would inquire if any solution can be given to this phenomenon. Ratio.

Laying out and Management of Gardens. By Wm. Scott. [For the New-York Farmer and American Gardener's Magazine.]

Mr. Editor,—This being the season of the year when almost every one is in some way delighted and interested in gardening, I take the liberty to submit a few hints, which I hope may not be unacceptable to your readers. The importance and utility of gardening require no advocacy; all being agreed that its departments are fraught with lessons of interest to every man. The floral department in particular yields the most economical, healthful, and delightful pleasures that can be procured. The culinary department cannot, it is well known, be dispensed with by those who have regard to the delights of a wholesome table. By an outlay, not to be mentioned with hundreds of other daily and yearly expenses of every man, who has any property, a table may be supplied the whole year round with the choicest kinds of vegetables. The fruit garden is not to be overlooked, although this is a land where it grows by the highways and byways. No fruit is so grateful as that plucked by one's own hand and produced by one's own culture. There is nothing more enchanting than the boughs of faithful trees bending with the weight of their luscious load.

I shall point out a few rules by which the most useful productions of the garden may be more easily obtained than is generally imagined. As the season is too far advanced for either pruning or planting fruit trees to any extent, I will merely observe that they should never be planted too deep nor too close. New planted trees should be kept from drought by laying some litter or inverted turf over their roots. Almost all vegetables intended for a full crop should be put in the ground in this month or early in May. It is, however, never too late in the season to lay out flower or fancy gardens, with the exception of transplanting shrubbery, which, indeed, can be done if in pots or boxes, or if they can be raised without disturbing the roots or the soil about them. A garden may be laid out and furnished in the heat of summer, so as to look as well as if it had been

done earlier in the spring. The first season it seldom meets the proprietor's wishes, let it be done at what time it may; therefore, he has through the course of the summer the advantage of getting his work done at a time when other gardening operations are not crowding on the gardener's time. He will also have an opportunity by the succeeding fall or spring to make his selection of plants. All things considered, I prefer summer for laying out new pleasure grounds, or making improvements on old ones. When commencing, the first thing to be done is to fix on the levels of the ground. Having accomplished this, and regard having been had to the appearance of the figures from the most prominent station, drawings of the whole plan should be taken, and an accurate measurement of each figure made on geometrical principles. Accuracy in this part of the business is of first importance, because a small mistake at one place from which measurements are frequently taken, great blunders may occur. Having ascertained how the ground holds out, you must next proceed to make up the edge with boxwood, &c. This is done by making them very firm by trampling, beating, and smoothing them off to the proper levels, and cutting it cleanly out for receiving the box. This should never be omitted to be done first, for otherwise it is impossible to be so neatly finished. The plantation of shrubs next follow, which should be done with the greatest care, making large pits, spreading the roots horizontally out at their own level, and watering immediately after. The whole arrangement would be too tedious to describe in this article. No person can arrange them properly unless he be fully acquainted with the habits of all of them. Generally, however, the free growers should be put in the most exposed situation on poorest soil, and the tender and more shy in the most sheltered places and best soil, keeping the largest always at the greatest distance, and filling up the spaces amongst them with herbaceous plants in the same manner. The laying down of grass plats is so simple that I would not mention it but for the great improvement that could be made on those of this city. The want of neatness and order greatly detract from the pleasure these portions of ornamental grounds should afford. Nothing looks better than a fine smooth lawn or grass plat. To obtain this, the place intended for it may be made up of any coarse stuff to within six inches of the top. Then lay on that thickness of good earth, but no ways enriched. Tread it and beat it as firm as possible when in a dry friable state, and when perfectly even either turf or sow it. Some people contend that it is owing to the climate that the grass cannot be made as fine here as in England; but the writer has only to refer to several places in this city under a proper management, to prove the contrary. The difference is owing almost entirely to the laying down and keeping. Yours, respectfully, WM. SCOTT.

REMARKS.—If florists and nurserymen were more in the habit of keeping perennial flowering plants, grape vines, and dwarf fruit trees, in pots and boxes, it would be very convenient for those living in cities and towns to lay out and ornament their yards and lawns in the summer. Merchants and traders in cities have more leisure from the beginning of June to the end of August, than either in the spring or fall. From the fact that neither they nor their families find it convenient to have yards laid out in April and May, it is omitted altogether. We presume one reason why English grass plats and lawns retain a more fresh and lively green than they do in this country, is that they have a greater variety of natural grasses. At the seed store in Barclay street may be obtained upwards of twenty kinds of English grasses, in small or large quantities. Also, a mixture of the kinds suitable for grass plats, put up in small packages.

Vineyards in the United States. By A. J. DOWNING. To the Editor of the American Quarterly Journal of Agriculture, Mechanics, and Manufactures.

Living, as we do, in a country whose boundaries extend from the 25th to the 48th degrees of latitude, embracing perhaps a wider range of soil and climate than is possessed by any other civilized nation, a government more perfect and a population more enlightened, it is not a matter of surprise that we should attempt to render ourselves as independent of foreign supplies, both of the necessaries and luxuries of life, as our natural advantages would seem to indicate we should be. With these views and feelings, American agriculturists and horticulturists have for a long time been striving to transfer a portion of the production of two of the most essential articles of wealth and luxury of our foreign neighbors, for which we have long paid heavily, to our own shores. We allude to the staples silk and wine. The vast sums annually expended for these articles, and the conviction that impresses itself upon the mind of every person, that there must be some place in our wide-spread country favorable to their production, have not been without their due effect in stimulating our cultivators to repeated efforts in the home cultivation of articles which have become so essential as to be considered absolute necessaries. Our trials have not been without success: rearing the silk worm, it is gratifying to say, is no longer a matter of doubtful profit or experiment: it has taken a firm stand as to the excellency of the article, and the numbers who now derive their support from the production of it, are such sure tokens of evidence that it is no longer considered unlikely that we may soon rival the far-famed fabrics of France and Italy.

It is now nearly half a century since the introduction of the foreign grape vine into the United States. For a considerable period its cultivation extended but little farther than the precincts of our cities, when in numerous instances it succeeded and still succeeds, for obvious reasons, in producing crops equal to those of its native soil. About 35 years ago, experiments were made on a considerable scale, with a view to the making wine from foreign grapes. These experiments *entirely failed*, and it was not from want of experience in culture, as, in many instances, the experimenters were practical *vignerons*. Wisely judging that an object of such vital importance should not be hastily abandoned, associations were formed for the purpose of taking a wider range, and subjecting to experiment a larger number of the varieties of the foreign grape, known to produce good wine. The ill success which has been the result of these attempts in, we believe, every instance, is a matter of fact well known to every intelligent horticulturist in the Union. Notwithstanding this, a large portion persisted, and many still persist, in the belief that the wine grape of Europe will succeed as well in vineyard culture here as in the old continent. It is needless to mention that the representations of foreigners have been the principal cause of these repeated trials and their consequent repeated failures. Nor is there any thing to excite our wonder in the fact of the stubbornness to conviction of a new comer on this subject so familiar to him in the country from which he has emigrated. He beholds here a sky as unclouded, an atmosphere as pure, and a soil as fertile, as greeted his eyes in the land of his nativity. He finds himself in the same parallels of latitude. He witnesses most of the productions of horticulture and agriculture flourishing as luxuriantly and yielding as abundantly as in the longer cultivated countries of the old world. All these are to him convincing proofs, and he exclaims with enthusiasm, why shall these rich and fertile fields not rival the "vine clad hills" of France, Spain, or Italy? Why shall a portion of agriculture which yields such incalculable wealth to other nations be excluded from this? With these views, he anxiously persuades himself that former failures in the foreign grape culture have arisen from an injudicious selection of soil, or mismanagement in the cultivation. Entirely neglecting the indigenous grapes which nature has scattered with a liberal hand on every side of him, he insists that the foreign one must and will succeed. Our countrymen, stimulated by the candid and earnest reasoning of such persons as these, have been induced to believe the native grape worthless, and to invest considerable sums in planting, time after time, vineyards of foreign grapes, which have resulted in almost every instance in a total loss and failure. We are happy to see that these circumstances are beginning to have their proper influence, and that many are now successfully directing their attention towards our native products. Much prejudice, however, yet remains, with a view to aid in dispelling which, we intend briefly to recapitulate a few of the most prominent efforts on both sides of the question.

In the year 1779, an association was formed in Kentucky for the promotion of the cultivation of the vine. The establishment was placed under the direction of a number of Swiss *vignerons*, with John J. Dufour, a practical vinedresser, who had travelled through many of the wine districts of Europe for information, at their head. It was the intention of the association that the extent of the vineyard should be 163 acres: 5 acres were planted as a commencement, with 35 kinds of foreign grapes, several of which were brought out by the Swiss, and even such as were eminently successful in their own country. These men, with their more than ordinary exertions were unable to succeed. They found it impossible to preserve the foreign vine from the blight and mildew, so destructive in this country, and the company at length totally abandoned the enterprise.

Soon after this, a very considerable society was formed at Philadelphia, which took into its direction the vineyard planted by Peter Legaux, a French *vigneron*. Hoping that out of the great number of varieties of foreign grapes cultivated in Europe, some might be found adapted to our climate, they procured as many of the most celebrated as were at that time practicable. Legaux still retained the management of the vineyard; but after several years' trial, they were forced to admit that

the only grapes in this collection capable of producing a good wine were a few varieties falsely passed off under foreign names by Legaux, but which have long since been ascertained to be genuine natives.

We have pointed out these two instances as the most worthy of our attention in the middle section of our country. Our fellow-citizens of the south have not been less spirited. Thinking that they possessed a warmer and more congenial climate, which approached nearer to the sunny skies of Spain and Italy, they too in the first instances directed their efforts towards the foreign product. Their efforts were attended with as little success as our own. It is proper to state that their experiments were not limited to a few varieties, but that neither pains nor expense were spared in procuring all the most desirable. A single person, at Charleston we believe, imported as many as 200 varieties. We have before us a letter published in the American Farmer, 1829, from Robert Withers, Esq., Green county, Alabama, from which we make the following extract:

"With regard to the vine, all our efforts were fruitless so long as we confined our attention to the cultivation of the foreign, particularly the French varieties. Being myself a resident in the French grant, one of the leading provisions in the transfer of which was the cultivation of the vine, I have had many opportunities of seeing experiments fairly tried with a great many varieties, and under the care of professed vignerons, but never, in one instance, have they been repaid for their labor and expense. Being generally unacquainted with any other cultivation except that of the vine, and finding themselves so entirely baffled in their best directed efforts to insure its success, many of them abandoned their golden dreams and their country together."

In a letter published some time ago in the Western Tiller, from Mr. Bringer, Surveyor General of Louisiana, we find the following paragraph:

"Mr. Deghorn introduced here from Leghorn, about four years ago, upwards of 20,000 plants of the Italian grape vine, which have nearly all perished, except a few which were planted in the city (New-Orleans), in the rubbish of old brick houses."

We might extend the evidences of failure in this quarter *ad infinitum*, as the experiments were very many and spirited; but pass over them to notice another of a more recent date, which has been conducted within our own boundaries.

In 1827, Mr. Alphonse Loubat, a gentleman from the south-west of France, strongly enthusiastic with regard to the success of the foreign grape in this country, and deeply anxious, as we believe, to enrich the land of his adoption with a wine rivalling the products of De la Marne or Haut Burgogne, from the same materials, and to prove to the Americans the fallacy of their prejudices on this subject, established on Long Island a vineyard of about 40 acres at an expense of about thirty thousand dollars. The vines were all imported from France, and as one of the reasons assigned by Mr. L. for our bad success in previous attempts was an unsuitable soil, we may rest assured that his own selection was made with the nicest accuracy. Although out of more than 200,000 roots planted, Mr. L. could not succeed in cultivating a greater number than 60,000, still, in 1828, he expressed himself as sanguine in his hopes as ever. The fact is well known to horticulturists, that in most cases the foreign vine bears a good, often an abundant, crop in the commencement; but that this, alas! only serves to foster hopes which are never to be realized, as it is often a lapse of many years before the sickly exotics produce another healthy cluster. It is now six or seven years since the planting of Mr. L.'s vineyard, and from all recent accounts, we believe that it is likely to follow fast in the steps of its predecessors. Mr. L. may have realized something from his extensive sales of vine plants, and from the high price consequent upon scarcity, which his few grapes brought in the market of New-York; but as to the fact of wine making, now in question, we believe his patriotic hopes and golden dreams are as far from fulfilment as the earlier ones of his brethren the French and Swiss of the South and West. The facts are now so numerous, and the proofs which experience has placed before us so decisive, that horticulturists throughout the Union are now almost unanimous in the following opinion: *Foreign grape vines cannot be depended on for a crop (except in cities), even in garden culture; and for the formation of vineyards they are perfectly worthless.*

We have but barely glanced at the dark side of the picture, and a person not conversant with the subject might be ready to conclude that we should still have but little hopes of releasing ourselves from our dependancy on "La Belle France" and her sister kingdoms for this pure and delightful beverage. But we have fortunately better prospects. Persons have not been wanting, who, with that true perseverance and patriotism which distinguishes the American character, have persisted in their efforts, and have finally presented to the view of the people of the United States the exhilarating prospect of healthy flourishing vineyards, whose products, if they do not already equal those of the most celebrated districts of Europe, only require age in the liquor, and additional experience of the cultivator, to enable them to do so. While they now infinitely surpass the thousands of gallons of vilely adulterated and manufactured stuff daily palmed off upon our citizens as the genuine products of those districts. These vineyards are in every instance planted with *native vines.*

Among the persons to whom we are most indebted for their spirited devotion to this interesting branch of culture, we may be permitted to mention the following: Adlum, of the District of Columbia; Dufour & Longworth, of Ohio; Bonsall & Echelberger, of Pennsylvania; McCall, of Georgia; and N. Herbemont, of South Carolina; men whose names will be recollected with gratitude, as having successfully demonstrated the capability of our soil for producing an innocent and healthy drink, which may not only be the means of saving millions to the country, but also thousands of our fellow creatures who go down to their graves victims to the intemperate use of distilled spirits.

Major Adlum's experiments were commenced more than 30 years ago, and, as was the case with all the cultivators of that period, he began with the foreign. But after having expended considerable sums of money, and wasted much in efforts which he emphatically confessed "utterly failed," he fortunately turned his attention to the indigenous production. His success with the latter is well known, and his flourishing vineyard near Georgetown has, we doubt not, furnished valuable information to many an afterward successful *vigneron*. Mr. Adlum has also given to his fellow-citizens the results of his experience in a work entitled "A Memoir on the Cultivation of the Vine in America, and the Best Mode of Making Wine," which may be safely consulted by the wine maker as being the best practical *book* on the subject adapted to the climate of the U. States, yet published: Mr. Adlum having devoted a considerable portion of his life to this pursuit, and having produced a liquor which Jefferson declared equal to the best Burgundy. In the prefatory remarks Mr. A. has the following observations: "I have no question on my mind that this will be the most profitable article of agriculture in the United States. I am very sure that we will make more wine off the same space of ground than any other country; and that we will rival the world as to the quality of it, when the cultivation of the grape vine becomes general."

Mr. Dufour (whose name we have already mentioned) published, in 1825, the "American Vine Dresser's Guide," a work of much utility, and which, considering the difficulties he labored under with regard to our language, is creditable to him as an author. It is a conclusive proof of the position we have taken, that this gentleman and the same Swiss who we before adverted to, as having made the unsuccessful attempt in Kentucky, are the very persons whose beautiful vineyards at Vevay have become a matter of public notoriety throughout the Union; and whose desponding hopes were revived and future labors rewarded by a single variety of native grape, which good fortune threw into their hands, and with which these vineyards were soon after commenced.

Mr. Bonsall's vineyard is located near Philadelphia, and Mr. Herbemont's in Columbus, South Carolina, thus practically proving the capability of the North and South for the production of a good wine from the proper *material*, while both are equally unsuccessful so long as we confined our trials to the European production. A communication from the first of these gentlemen detailing his very interesting practice, may be found in the valuable "treatise" lately published by W. R. Prince, of Flushing. We have also lately perused a small pamphlet on the subject by Mr. Herbemont, with the greatest satisfaction. This is, to a person commencing a cultivation comparatively new in this country, an invaluable work—concise, yet containing the most minute details of the practice of a person who has been eminently successful, and whose manner of detailing the routine of that practice to others is so clear that the most ignorant may inform themselves. It is truly *multum in parvo*, and should be in the hands of every wine maker in America.

Mr. Longworth's experiments are conducted in the neighborhood of Cincinnati, Ohio, and will, we have reason to believe, be the means of rousing the attention of the cultivators of that fine fertile country. A letter from Mr. L. has lately appeared in the published proceedings of the Massachusetts Horticultural Society, accompanied by the remarks from its President, that Mr. L.'s wine was the "only specimen he had ever tasted of American production from the fruit of either foreign or native grape which was the

pure juice of the grape, without the reinforcement of *sugar* or *spirit*; and that it not only resembled in color and flavor those from the vintages of the Rhine, but even rivalled some of the varieties of that region which have been imported to a considerable extent within a few years, and are now so generally drank, and as highly appreciated in this country." The following is an extract from Mr. Longworth's letter: "Some of my friends had purchased of Boller, of N. York, some of his Rhenish cabinet wines, for which they paid him from 15 to 36 dollars per dozen. I challenged them to place them in competition with my *domestic* wine at our late fair. The society appointed a special committee of wine merchants and connoisseurs: I am not certain whether 12 or 15 of the committee* attended. Three bottles of wine of the same size and shape were submitted; one containing Johannesberger, one Geisenhemer, and the third a domestic wine from a native grape, the same I sent you. They were ignorant of the contents of each bottle, and were left alone to make up their decision. When the company were admitted, it appeared all but two had decided in favor of the bottle containing the domestic wine. The principal importer of the cabinet wines was present; the three samples were submitted to him, and he selected the same bottle. The domestic wine was of the same color and character, but in flavor and aroma, *sui generis*, having the flavor of the fruit. * * * We have nearly completed the vintage at *one* of my, vineyards containing about four acres; but a part of the vines are too small to bear. My vinedresser's estimate was 2000 gallons; my own $1500. It will not fall short of my estimate."†

It is a fact highly creditable to the persons here engaged in this cultivation, that they have freely communicated to each other, and to the public, the detail of their experiments, and the deviations necessary from the European practice; thus generously placing before a tyro the steps proper to be taken in our transatlantic climate, and with our American materials. It is computed that there are now 5000 acres of vineyard in the U. States, scattered over the face of the country, a great portion of which may be pointed to as agricultural monuments of the exertions of isolated individuals, whose perseverance has been crowned with the most decided success, the sneers of disappointed foreigners and despisers of American productions to the contrary notwithstanding.

We will only add, that with facts and evidences now daily crowding before them, the agriculturists of the United States can hesitate no longer, but proceed with our national energy to establish on a grand scale this profitable and delightful avocation, on our own soil; to lessen our heavy expenditures abroad, and to add another mighty link to our already extensive chain of agricultural resources. Thousands of acres of our rocky, gravelly and sandy soils, now almost worthless, are admirably adapted to the growth of the vine, and may be made at once the most beautiful and most valuable feature in our agricultural landscape.

Who, we would ask, would not exchange the filthy mixtures, so many thousand gallons of which are annually imported and sold under the name of *wine*, for sparkling champaign and generous Burgundy, the products of our own rich and fertile soil? Who would hesitate to banish the firy poisons, whiskey, rum and brandy, which destroy so large a portion of the lower classes of our citizens, and place in their hands the delicious and temperate refreshment of the peasantry of France and Italy? Strange indeed would be the conduct of a man who would reject such offers; stranger still will be the fact, if the experience of twenty years hence does not bear ample testimony to the truth of our most sanguine expectations in relation to the vine culture in North America. A. J. Downing.

Newburgh, N. Y.

* See also, report of above committee, N. Y. Farmer, vol. vi. p. 363.

† The following are the best wine grapes for this climate, all of which are natives: 1. Catawba; 2. Isabella; 3. Bland's Virginia; 4. Schuylkill Muscadel; 5. Elsingburg; 6. Scuppernon. This last, we believe, succeeds only in the southern states.

Growth of Flax and Manufacture of Linen in the United States. By S. Blydenburgh. To the Editor of the Quarterly Journal of Agriculture, Mechanics, and Manufactures.

Sir,—I would not subscribe to the opinion of Dean Swift, that "he who makes two blades of corn, or two spires of grass, grow where one grew before, does more essential service to mankind than the whole race of politicians put together;" but I firmly believe, that he who points out to honest industry a source of individual and national wealth, renders more benefit to mankind than he who astonishes the nation with his eloquence in exciting the flame of party spirit.

In this belief, and with this object in view, I take the liberty to offer you a few remarks on the culture, management, and manufacture, of flax; not, however, with any expectation of effecting so desirable an object as to place that article on the footing to which it is entitled among the productions of our country, and on which footing it is destined to stand at no very distant period, in spite of the caprice of fortuitous circumstances; but merely to suggest a few rude hints, which may call the attention of better talents to the subject, and perhaps serve as a kind of nucleus to a body of better information respecting it.

The older inhabitants of our country remember when cotton, either as an article of agriculture, manufactures, or commerce, was scarcely known in this country; and when, even in Europe, the principal acquaintance with it in a manufactured state was in goods imported from India. At that time, though the price of a pound of cotton was fifty cents, or more, the southern planter could not afford to separate it from the seed, even at that price. Linen was then nearly the sole article used for under dress, or for fabrics used as household furniture.

But the ingenuity of two or three men has turned the scale. Mr. Whitney invented a machine to separate the cotton from the seed, and Hargrave and Arkwright machines to spin it; and the labor of producing the finest fabrics, with the additional help of the power loom, is now almost annihilated. In the space of a few years linen is almost expelled from market and from use, and cotton has become the basis of the manufacturing interest, and the main pillar of our exportations.

But this entire revolution in the use of the two articles is in no degree owing to their relative value; but to a remarkable concatenation and succession of accidental circumstances, which, had the order of the causes and circumstances been reversed, would have produced a completely reversed effect.

For many uses, the decided preference due to linen over cotton is abundantly proved by its still being purchased, at a much higher price, by those who can afford it. The money which would have purchased one pound of cotton and paid for spinning it into coarse yarn, before the application of machinery to cotton manufacturing, would now buy eight yards of handsome cotton cloth, finished in a superior style; but the price of flax is the same now as fifty years ago. In the spinning no improvement of much importance has yet been effected; and in weaving, even the common fly shuttle is still but partially introduced. But the reduction in the cost of cotton goods, though more than three hundred per cent., is not the only advantage which cotton has gained over linen: it has improved as much in perfection and beauty as in cheapness.

And yet, I repeat it, the present commanding superiority which cotton has gained over linen, is not owing to its relative intrinsic worth, but to the caprice of adventitious circumstances. Had it been the good fortune of flax to have been the subject of the improvements of which it is susceptible, it would have held at this day as distinguished a rank in agriculture, commerce, and manufactures, as is now occupied by its more fortunate rival, though it can hardly be reckoned amongst the articles of American production; and what there is is scarcely entitled to the name.

Nothing but total abandonment can now put cotton back to the place it occupied a few short years ago; and nothing but a little ingenuity, sustained by proper enterprize, is wanting to advance the progress of linen, at least in a corresponding ratio.

To effect this object it will be necessary to commence, not only by laying anew the foundation, but by preparing the ground on which to lay it. To make the business of flax-growing successful, a judicious location is of serious importance. Dry, windy, mountainous situations can never compete in the growth of flax with warm alluvial vallies, with rich and sufficiently dry soil, but moist atmosphere. When such a situation is selected and duly prepared, especially by the extermination of every weed, for flax cannot, like hemp, outstrip the weeds in growth—when it is skilfully sown with good seed,—nothing farther, except a good fence, is wanting to insure the agriculturist a good and profitable crop, provided he is met at the proper point by the manufacturer, and a market thereby opened.

But this meeting must take place when the flax is taken from the ground and bound in bundles. If it is intended for fine fabrics, this must be done while the stock is yet green; if for coarse, then the seed will be suffered to ripen, and will be retained by the farmer; but, in either case, the flax from that period must be transferred to the care and management of the manufacturer. No essential improvement can even begin to take place so long as the separating the flax from the stock, or, as it is commonly called, dressing, continues to be the business of the farmer.

The labor of dressing, as it is now per-

formed, is, generally speaking, worth more than the flax when dressed, so that all the expenses previous to that operation are completely lost. Therefore no judicious farmer will spend his time in producing it; and, of course, the American market can never afford a regular supply for any extensive operations.

It can never stand in competition with cotton so long as it is spun by hand; and it never can be profitably spun by machinery so long as it continues to be gathered in small parcels from different sources, and consequently of different qualities—dressed and prepared by different hands—some of it long, some short, some coarse, some fine, some clean, some foul, some harsh, some soft. It cannot be spun to any advantage by machinery, so long as the same parcel contains staple of different lengths, because the distance between the front and back roller must be in proportion to the length of the respective fibres; and if the rollers are sufficiently near to suit the short fibres, then the long ones will be held fast at both ends, and if far enough apart for the long fibres, then the short ones will want support: in either case the work cannot go on. If fine flax be mixed with coarse, they cannot be drawn into fine twist, and the fine fibres will not unite with the coarse to form a smooth thread, and of course a waste of stock is occasioned by spinning fine flax into coarse rough twist.

It has been abundantly proved by numerous experiments, that flax of nearly uniform length may be spun by machinery with far more rapidity than cotton; and it is no less evident that it may be drawn to any degree of fineness which the staple will admit of. But still, owing to the above causes, nothing of much importance has yet been effected.

To remove these evils, which prevent any essential improvement in the manufacture of linen, there exists but one remedy. The farmer must obtain and avail himself of due information as to the best method of managing the culture and growth of flax, until, as before stated, it is taken from the ground, properly dried, either in its green state or after being divested of the seed and bound in bundles. In this state it must pass into the hands of the manufacturer. The price may be fixed by the ton or hundred.

The first business of the manufacturer must be to assort it into different parcels, according to the length, texture, and other properties. By this process the qualities of each parcel will be sufficiently uniform, and each may be spun with hitherto unknown rapidity and evenness of thread, and as fine as the fineness of its fibres will admit.

The next process will be that which is commonly termed rotting, or preparing the fibres to separate from the inner stock, which constitutes the shives, and from each other. The quickest and safest, and without doubt the best mode of effecting this, now in use among the most skilful producers of flax, is water-rotting. It is not the intention of this article to give any detail of the manipulations in rotting or dressing flax, nor in the subsequent operations of spinning and weaving, but merely to awaken and invite the attention of inventive genius to make improvements, where reason and science declare that improvements can absolutely be made.

To make improvements in the processes of rotting and dressing certainly opens a field for interesting experiments, both to the chemist and mechanic. How far the former can be aided by the application of steam, or by the chemical agency of chlorine acid, or by any other chemical agency, is a question worthy of serious attention, and not of very difficult solution, especially to one who possesses the requisite science and the means to make the experiments.

The operations of dressing, fining, and softening, open a most extensive and interesting field to the inventive and enterprizing mechanic. It is this part alone which now retards the progress of improvement. Let ingenuity do for flax in this branch of the business what Mr. Whitney has done for cotton, and the rest of the business is so far accomplished that we shall soon see the linen manufacturing interest at least successfully competing with cotton.

It cannot but be obvious to any man of talents, as a general mechanic, that the simple operation of dressing flax may be expedited to almost any degree required; and that even without the aid of any great complication of machinery. This object may not perhaps be effected at once, but let it once be fairly commenced, and meet with any degree of liberal patronage, and successive improvements will complete the race.

When the flax is dressed, and is entirely clean from shives, the next step in the process will be *fining*. The principles of this operation may be learned from ancient experience, wherever it has been long in practice, particularly in Holland and in Ireland. The fibres of flax seem to be susceptible of longitudinal division, almost to infinity. It would be difficult to reduce a fibre of flax so fine but it may be split in two. But the laborious and tedious process by which this part of the business is now effected, could not fail to suggest to an ingenious mind that it is infinite lengths behind the improved state of the age. The business of softening is nearly connected with the fining, and much in the same state of improvement, or rather in the same want of improvement.

When these processes shall have received and profited by the attention they merit from ingenuity—when flax is grown and delivered to the manufacturer in a clean and thrifty state—when it is duly sorted according to its qualities—when it is dressed clean, fined, and softened, it will then, and not till then, be fit for spinning by machinery, and weaving by the power loom. We may then expect to see flax of superior quality making as respectable an item in the exports of the northern, eastern, and western states, as cotton now makes in those of the southern. We may then clothe ourselves in linen at as cheap a rate as we can now do in cotton, and in finer fabrics than it has ever yet produced.

The first adventurers in the manufacture of linen, on the principles here laid down, will find themselves amply compensated in consequence of the high price which the goods manufactured by hand must necessarily bear; and the farmer will find a new source of profit in taking his load of flax to market and selling it at a fair price, without having to go through the (to him) hateful and unprofitable labor of dressing it. The country will see itself in possession of a new and very valuable article for its use, and the patriot will have the satisfaction to see his country acquire a new and important source of wealth and independence.

SAMUEL BLYDENBURGH.

Lansingburgh, Feb. 11, 1834.

Tropical Plants—Panama Hats. By H. PERRINE. [For the New-York Farmer.]

MR. FLEET,—I now repeat my desire to have one or two of each species of fibrous leaved plants in the world; I begin to believe that some of the Musaceæ do actually produce fibres foliaceous, to render them desirable objects of cultivation, along with the Bromeliaceæ, Pandaneæ, Tulipaceæ, Asphodeleæ, Palmæ, &c. I have made a singular discovery, that the Panama hats, hammocks, &c. which appear to be made of vines, or rushes, or grasses, are actually made from the top shoots of palms, boiled and split with teeth like a comb. They are esteemed the most durable hats in existence, besides being water proof. That Brazilian substitute for hemp and flax I should like to get hold of, by the time I reach New-York in May from Florida. A former student of mine, who sailed the 30th ult. for Havana, ought now to be exploring along Cape Sable, to save me labor when I get there; for whether my bill pass or not, I shall select a spot for cultivation this spring.? If you send the numbers of your Farmer to Prof. Sagra, I hope to get a peep at them in Havana, during April. If possible, ascertain whether it be a Heliconia, or Strelitzia, or Uranea, or Musa, whose leaves yield the fibres of which the finest muslins of India are prepared.

I have just demonstrated statistically to the Secretary of State, that labor in the United States produces 100 per cent. more than in the West Indies, of tropical staple, and that we can profitably export them to the torrid zone itself. Yours, &c.

H. PERRINE.

Campeche, Feb. 20, 1834.

REMARKS.—The editor of the New-York Farmer, in compliance with Dr. Perrine's request, will take charge of any fibrous or other useful tropical plants that may be forwarded to his care. A reasonable compensation will be made in cash, or return in other plants of warm climates. We hope those who take an interest in the laudable undertaking of Dr. Perrine, will not be unmindful of him.

Visit to the Farm of CHARLES H. HALL, *Esq., at Harlaem.* By the EDITOR.

On the 27th March last, we, in company with Dr. U., made a call of a couple of hours on Mr. Hall. The weather was cold and unpleasant, enabling us to see but a little and collect but a few facts.

Harlaem is but seven miles from the City Hall, on New-York, or Manhattan, Island. It is the village at which it is intended to hold the semi-annual exhibitions and sales of live stock and agricultural produce and implements. Mr. Hall's landed estate consists of about 200 acres, most of it occupied for farming and gardening purposes. The greater part of the land is generally level, but sufficiently varied to give variety of aspect and exposure. The dwelling combines a unison of imposing effect, appropriateness of style, and convenience and comfort. It is surrounded with a great variety of ornamental

and fruit trees, and shrubbery, all set out in manner not only void of stiffness, but conveying the idea of ease and elegance.

Among the objects that first struck our attion was a peach tree, four years old from inoculation, and about five inches in diameter, and in the most healthy condition. This, standing where it received the wash of a drain from the kitchen, was pointed out in comparison with one in a drier situation, which was much less in size. Mr. H. uses a wash of potash water for all his fruit trees, all of which looked remarkably thrifty. We were shown a peach 30 years old, in a renovated, healthy, and bearing condition, by the use of this wash. The same was the case with a vergaloo pear. His nursery of peach trees consisted of near 30 of the best varieties, and in a remarkably thrifty state. All of his trees exhibited a very vigorous growth, and, we were informed, bore abundantly. A few trees were pointed out, which had not had the wash applied. The difference in them was striking. Those unwashed were mossy, and had a grey, dull, old, rough appearance; the bark of the others was smooth and fresh, and exhibited a youthful vigor. He digs about his trees every spring, and applies a compost of lime, river mud, and horse manure. Since the roots extend out equi-distant with the branches from the trunk, we should suppose the application of this manure around the trunk of the tree would not reach the roots. His trees were not disfigured by the excessive pruning too common in the vicinity of the city.

The grape vines, which are of the Isabella, showed an astonishing growth, and last year, if we recollect right, yielded not much less than 2000 lbs. These vines cannot be said to occupy one foot of ground, that could be devoted to any other useful purpose. They are trained up the sides and over the roofs of the out-houses, or along fences.

The largest apricot tree we ever saw was one standing in the richest part of Mr. H.'s garden. One trained on the south-eastern side of his gardener's house was swelling into bloom. To retard it the branches were covered with boughs of cedar trees. We are inclined to think, from what we have seen, that a western exposure is more favorable for this tree.

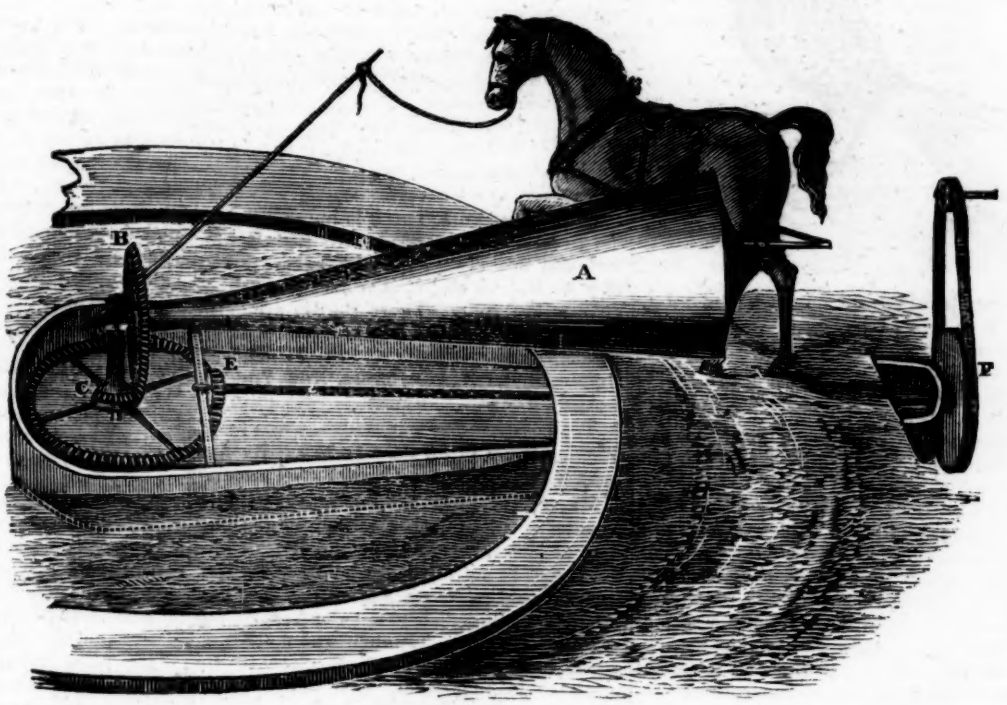
Mr. H. makes much use of a roller. His is 8 or 10 feet long, and made of four old waggon wheels, covered with three or four inch plank. It should consist of two parts, united by an axletree. Thus made, the roller can be easily turned about, without making the surface of the ground rough. When we were there Mr. H. was using it on his grass lands.

The farm joins on the Harlaem river, and embraces a considerable extent of river flats. From the mud of these flats, with the addition of lime and his horse manure, he made last year 8000 loads of compost manure. This quantity can and will probably be made every year. Some idea may be formed of the state of the land from this fact.

Mr. Hall is laying out from 30 to 40 acres for a vegetable garden. We presume, under the care of his first-rate gardener, it will not be surpassed by any establishment of the kind in the country. Adjoining this portion of the grounds are two or three beautiful ponds, made by digging out and damming up small creeks. Near the outlet of these creeks is a very considerable extent of flats, overflowed by the salt water of the river. Mr. H. intends to dyke them in. He thinks, by overflowing them with the water from the fresh water ponds, to bring them into culture in the course of ten years, which are about half the usual time.

It is unnecessary for us to say, that the out buildings are convenient, and in excellent order. Mr. Hall is distinguished as an importer and breeder of superior live stock. Several horses raised by him have been sold as high as three or four thousand dollars. His short-horn Durham bulls and cows are first rate. He has two of the finest and largest cows of this breed that we ever saw. They are white, perfectly gentle, and can be handled by strangers. The principal part of his stock is on his farm at Greenbush, opposite Albany.

The above is a hasty and very imperfect sketch of what we saw in a short visit. On a future occasion, we hope to state additional particulars.



Description and Drawing of Beecher's Portable Horse Power. By the INVENTOR. [For the New-York Farmer and American Gardener's Magazine.]

This power is applicable to all purposes where speed is necessary, particularly to thrashing, grinding, turning, and sawing. Its superiority consists in the simplicity of the gear, only two wheels of 23 and 30 inches, with pinions of 9 and 6 inches, are necessary to get a speed of two to three hundred revolutions per minute. The power being obtained by a revolving lever on a smooth surface, it is not liable to break by sudden impetus, or stoppage. It requires no frame or building, but is simply fastened to the ground or floor. The lever may be increased in length without diminishing the speed. It may be removed and erected in three hours' time. It can be placed in a back yard or cellar, and it makes no jarring in the building.

REFERENCES.—A, revolving lever; B, driving wheel; C, nine-inch pinions; E, line shaft; and F, band wheel.

This horse power may be seen in the yard of the Railroad House, 98 Barclay street, New-York. The right to territory may be obtained of the inventor at the above place. Machines of one, two, three, or four horse power furnished to order at 60, 75, 90, and 100 dollars.

A portable cider mill and press to be seen as above.

Bone Dust.—*Mr. Editor*: In one of the late numbers of your Farmer and Magazine, you recommend bone dust to enrich the soil in flower pots. Agreeably to your suggestion I sent and bought some, and applied it to my plants in the parlor. But I was very glad to get rid of it as soon as possible, for the fragrance emitted added nothing to the olfactory pleasures of those in the room.

Yours, Eliza.

April, 1834.

Remarks.—We confess to Eliza that during fermentation of the bone dust a gas is emitted, but not such as to wrinkle a prominent feature of the face very much. She should have fermented it out doors, and then have put into a small pot not exceeding a gill, and mixed it well with the soil. In this way we presume she would have had no occasion for so much trouble. We hope she will, like all good gardeners, persevere and make further trials, and then report progress to us.

Description and Drawings of Fancy Pigeons —The Jacobine and the Nun. By D. F. Ames. [For the New-York Farmer.]

Mr. Fleet,—The next variety of the pigeon tribe that I now describe for you is *the Jacobine*. This is a very pretty bird,

and rather less than the common pigeon in size. It is rendered remarkable by the inversion of its feathers on its head and neck, which turn forward, and nearly hide its head in the feathery hood. The color of the bird must be yellow, red, black, or blue, (there are some mottled,) while the head, tail and flight feathers, are to be always white. The yellow color generally bears the highest price. The head should be small, with a short spindle beak, and a clear pearl eye. Some have feathers on their legs and feet, but this is a matter of fancy, each sort having their admirers.

This bird derives its name from a religious order of monks, who wear a cap or cowl for the covering of their bald pates; therefore, the upper part of this feathered covering is called the *hood*, and the lower part the *chain*, the longer and more compact these are the greater is the value of the bird. Good birds of this sort are scarce here, but they are very carefully bred to great perfection in France and Holland. Louis XVIII., the late king of France, had a large assortment of Fancy Pigeons, including almost every variety; and Buffon, the naturalist, enumerates upwards of thirty sorts, and amongst all these the king is said to have preferred the *Jacobine*. In America they are generally called *ruffs;* but the *ruff* is a larger and every way inferior bred pigeon to the real *Jack*, or *Jacobine*.

This variety is not the best for breeding, and is often very ill natured in the loft with other pigeons. They may be purchased at the seed store, 81 Barclay street, from two to three dollars per pair, where any other variety may also be had to order.

The Nun is a contrast to the sort just described; in feather it is marked exactly the reverse of the former, having its head, tail, and flight feathers of one uniform color, either red, yellow, or black. Its body should be always perfectly white. Its head should be covered with a *veil*, or *hood*, of white feathers, which rise just below the colored head, and returns over it like a plume in a bonnet. The larger this tuft or hood the greater the value of the pigeon, and the more handsome appearance it makes. The Nun derives its well-known name from its hood, or veil, which resembles that religious order. It is a small pigeon, should have a small beak and head, also a *pearl* or *white* eye. We have this variety in New-York, but it is imperfect; all the birds that I have seen are without the veil, and are always black-headed. They may be had as above, at from two to three dollars the pair. These birds are also indifferent nurses, and somewhat quarrelsome.

D. F. A.,

81 Barclay street, New-York.

April, 1834.

Pruning Trees in St. John's Park. By Arbor Ramosa. [For the New-York Farmer.]

Mr. Fleet,—One of the rules given in pruning is not to cut off a limb more than four or five inches in diameter, if it can be avoided. Being obliged every day to pass this beautiful park, my sense of beauty and propriety is offended, if not shocked, by the havoc of the trees. Branches of more than a foot in diameter are cut off close to the trunk or leading stem, apparently for no other object than to violate nature. Weeping willows, catalpas, horse chesnuts, elms, and all others, present naked, black, deformed trunks. In the whole park it cannot be said there is to be seen one tree of any size in its natural form and beauty. If the branches of some trees interfere with those of others, it would have been far better to cut down a few than to disfigure the whole of them. By setting out shrubbery in the place of those cut down, the forms of nature, and consequently the beauty of the park, would be preserved.

I hope Mr. Curr, the worthy and industrious keeper of the Battery and the public Park, will pledge himself to more correct principles, and not follow the fashion of the day in removing so many of the essential co-ordinates, that nothing but a feeble and half-exhausted knotty trunk is left to perform all the functions. He must bear in mind, that those now coming in power will *reform* all that go the whole against *branches*.

Yours, Arbor Ramosa.

April, 1834.

He sought for truth in academic groves.—[Somebody.]

Fermented Manures.—*Mr. Fleet:* Mr. Buel, in his address to the State Agricultural Society, inquires what it is that escapes from fermenting manures? If he will take one bushel of horse-dung, put it in a coal-pit, and let it undergo the process of the coal-pit, I believe he will be at no loss to know that it is chiefly carbon. The watery particles being drawn off, the carbon is left, and will be nearly equal in bulk to the original bushel of horse dung. If, then, the great substance of the article be carbon, is it not evident that this carbon, being united with oxygen in fermentation, forms the carbonic acid gas, or food of plants; this being buried in the earth, and the earth being heavier, it will naturally arise to the surface, and being heavier than atmospheric air, will not be apt to ascend, but will remain near the surface, where it is taken in by the capillary vessels of plants, and forms the chief part of their substance. I believe he is mistaken in recommending to plough the manure to the surface, that it may be taken in by the roots, because such manure is prone to descend. Now, I am convinced, first, that the roots of plants take little, save water, from the earth; and when manure is properly fermented, little remains either to ascend or descend. The idea that plants, on analysis, contain particular ingredients, and that these particular ingredients are their proper food, is very fanciful, but not new. Surely, Mr. Buel has never found opium, or any of the constituents of peculiar plants in the soil in which they grew. These peculiarities are evidently the result of the digestive powers of different plants. The more we study the subject the more we shall be convinced that there is no such thing as specific food, no excrementitious matter, and that plants receive little from the earth, save water, by their roots. Such are my ideas; and I remain yours, &c.

R. M. W.

Potter, March 21, 1834.

Compost Manure.—*Mr. Fleet:* I was many years ago on a visit to a farmer of Long Island, a man of little book learning, but of much experience, minute observation and of good sound sense, in fact.

Of plain good sense, untutored in the schools, he had a hog pen, containing about 16 rods superficial measure; in this he was collecting and laying manure: first he laid about 12 inches of sea weed, over which he scattered a little corn, then 2 or 3 inches of pummice from the cider press, over this a little corn, then coarse cow-yard manure about 12 inches thick, and a little corn: in this way he continued alternate layers of sea weed, pummice, and barn yard manure, with a little corn to each, till it was about 5 feet deep, then put on 30 hogs. These rooting after the corn,

he said, would mix and make fine all the mess and prevent fermentation. In this I think we may see a correct practice. Without stopping to inquire, whether there be such a thing as HUMIC ACID, I will proceed to inquire whether it be of the use the farmer urges. If I understand aright, it is considered only as a solvent: I presume it will be admitted that nothing more is necessary to the putrid fermentation than *heat and moisture*. I hold that all manures, whether animal or vegetable, are chiefly composed of carbon, and must be acidified, forming a carbonic acid gas, before they can be received into the capillary vessels of plants; the putrid fermentation, the moisture, is acidified with oxygen, this combining with the carbon forms the carbonic acid gas of future plants. Now, if humic acid be a mere solvent, it will have no tendency to promote fermentation, and therefore will do little good in furnishing food. If we analyze the soil, we shall find little carbonic acid gas. All chemists who have done so agree that very little is found but in the atmosphere. Common sense will teach us it must abound, as all animal and vegetable matter are resolved into this gas: all the wood we burn, all the coal, all the volcanoes, all the breathing animals, are constantly furnishing it to the atmosphere: this is seized by the vegetable kingdom, assimilated, and becomes a part of the substance: a mere solvent, then, cannot furnish the proper food of plants. This doctrine will be more apparent, the more the subject is investigated.

R. M. W.

March 3, 1834.

REMARKS.—We wonder if this "untutored" farmer stopped "to inquire whether there be such a thing as" "carbonic acid gas," to which his manure must be converted before his grain and corn could receive it into their "capillary vessels?"

SPECIFIC FOOD OF PLANTS.—*Mr. Fleet:* In my neighborhood there is a tract of woodland, of about 800 acres, covered with a vast variety of timber trees: there are several varieties of oak, as many of hickory, the black and the white walnut, the sassafras, the maple, the beech, and many others. Now I would inquire, what is the specific food of all these trees; and whether each variety has a specific food peculiar to itself? RATIO.

Manufacture of Madder. By S. W. ABBOTT. [For the New-York Farmer and American Gardener's Magazine.]

Philadelphia, April 19, 1834.

MR. EDITOR,—Dear Sir: From the interest you feel in the dissemination of knowledge in promoting the culture of profitable productions, which our country so eminently calls for, I have taken the liberty to ask your advice with regard to the cultivation of an article of much importance in commerce. I allude to Madder. Your means of possessing information are no doubt such that will be of importance. The mode of cultivation I can gather from the Encyclopedia, but it does not go into the details necessary in preparing for the merchant or the manufacturer. The soil of most parts of our State, and particularly of the State of New-York, must be admirably adapted to its culture. If you can give me any light on the subject, it will afford me pleasure to reciprocate the kindness. Yours, very respectfully,

S. W. ABBOTT, 127 Market street.

REMARKS.—In the Encyclopedia of Agriculture, we find the following paragraph:

"Madder is sometimes cultivated, but only on land of the best quality, and with plenty of manure. At the end of April or May, according as the young plants are large enough to be transplanted, the land must be ploughed in beds of two feet and two feet and a half wide; the beds are then to be harrowed and raked, and the young suckers of the roots or plants are to be put down in rows, at intervals of a foot or a foot and a half, and at six or eight inches distance in the row.

"*During the entire summer* the land should be frequently stirred, and kept free from weeds. In the month of November, when the leaves are faded, the plants are covered with two inches of earth by a plough, having the point of the coulter a little raised or rounded, so as not to injure the young plants.

"*In the following spring*, when the young shoots are four or five inches long, they are gathered or torn off, and planted in new beds, in the same manner as has been pointed out above; and then in the month of September or October, after the faded leaves have been removed, the old roots are taken up.

"*The madder thus taken up* should be deposited under cover, to protect it from the rain; and after ten or twelve days, placed in an oven moderately heated. When dried sufficiently, it is gently beaten with a flail, to get rid of any clay that may adhere to the plants; and by means of a small windmill, is ground and sifted, to separate it from any remaining earth or dirt. It is then replaced in the oven for a short time, and when taken out is spread upon a hair-cloth to cool; after which it is ground and cleaned once more. It is then carried to a bruising-mill, and reduced to a fine powder, and is packed in casks or barrels for market."

Madder commands in the New-York market from 10 to 16 cents per pound, in its dried and sifted state. It is almost entirely imported from Holland. It is raised in some parts of Connecticut, but in quantities so small, that the dealers in the article, in this city, are scarcely aware of the fact. We shall endeavor to obtain particulars from the growers in that section. We would thank any of our readers to furnish us with further information.

Cast Iron Pumps. By L. T. [For the New-York Farmer, and American Gardener's Magazine.]

MR. EDITOR,—I send you the annexed drawing, representing a pump about two and a half feet high, and is designed for cisterns, particularly in kitchens, barns, green-houses, and other out buildings. The pump may be placed within the building, and the water drawn from a cistern without the building by the aid of a bended tube of copper or lead. The following are the directions for setting and using.

Unscrew the three screws in the bottom of the pump, and it will then be separated into three parts.

After placing the pipe into the well, carry the other end through the floor and sink, or where you wish the pump to stand; then put the bottom plate over the end of the pipe about three-fourths of an inch, and with a piece of wood the shape of an hen's egg, you will easily bend the lead into the place left in the plate for it; then hammer it down level with the top of the plate, and screw down the plate with wood screws, placing a piece of leather or cloth under the plate to make it tight, if it is set in the bottom of the sink; then place the leather valve and pump as you took them apart, and screw them together tight after having wet the leather in warm water.

The pipe should be placed a little descending from the sink to the well, so that the water will run out freely when necessary. This pump is so constructed, that by raising the brake clear up, the valves are opened, and the water passes off immediately out of the pump and pipe, which operation is necessary in cold weather to prevent it from freezing.

Manufactured by Scott, Keith & Co., East Bridgewater, Mass., Patentees, and sold by H. Huxley & Co. 81 Barclay street, New-York. Price, small size $8; large size $10.

L. T.

PIGGERY.—*Query, by a correspondent.*—In the American Farmer, vol. 5, p. 321, is a minute account of an extensive piggery and its management by N. Ingersoll, Brookline, Mass. Is such a piggery still existing, and is there any subsequent account of it?

NEW PUBLICATIONS.

Alphabet of Scientific Gardening for the Use of Beginners. By JAMES RENNIE, M. A., Professor of Zoology, King's College, London. 18mo. pp. 120, William Orr, London, 1833. [Continued from page 110.]

Humic Acid and Humin.—This important substance was first discovered by Klaproth in a sort of gum from an elm, but it has since been found by Berzelius in all barks; by M. Braconnot in saw-dust, starch, and sugar; and, what is still more interesting for our present purpose, it has been found by Sprengal and M. Polydore Boullay to constitute a leading principle in soils and manures. Humin appears to be formed of carbon and hydrogen, and the humic acid of humin and oxygen. Pure humin is deep blackish brown, without taste or smell, and water dissolves it with great difficulty and in small quantities; consequently it cannot, when pure, be available as food for plants.

Humic acid, however, which, I may remark, is not sour to the taste, readily combines with many of the substances found in soils and manures, and not only renders them, but itself also, easy to be dissolved in water, which in their separate state could not take place. In this way humic acid will combine with lime, potass, and ammonia, in the form of humates, and the smallest portion of these will render it soluble in water, and fit to be taken up by the spongelets of the root fibres.

It appears to have been from ignorance of the important action of the humic acid in thus helping to dissolve earthy matters, that the older writers were so puzzled to discover how lime and potass got into plants, and it seems also to be this chiefly, which is so vaguely treated of in the older books under the names of *extractive, vegetable extract, mucilaginous matter*, and the like. Saussure, for instance, filled a large vessel with turf, and moistened it throughly with pure water; when, by putting 10,000 parts of it by weight under a heavy press, and filtering and evaporating the fluid, he obtained twenty-six parts of what he termed *extract*; from 10,000 parts of well-dunged and rich kitchen garden mould, he ob-

tained ten parts of *extract;* and from 10,000 parts of good corn-field mould, he obtained four parts of *extract.*

M. Polydore Boullay found that the liquid manure, drained from dung-hills, contains a large portion of humic acid, which accounts for its fertilising properties, so well known in China and on the Continent; and he found it also in peat earth, and in varying proportions in all sorts of turf. It appears probable, from Gay-Lussac having found a similar acid on decomposing the prussic acid, that the humic acid may be found in animal blood; and, if so, it will account for its utility as a manure for vines, &c. Dobereiner found the gallic acid convertible into the humic.

Sugar and Gluten.—There are few plants that do not contain sugar, which chemists have shown to be composed of about three parts carbon, four parts oxygen, and eight parts of hydrogen. It would follow, therefore, that it is not necessary for it to be introduced into the soil in the state of sugar, the constituents being always more or less contained in the water, and most probably combined into sugar after entering the system of plant. This applies also to starch, which is composed of the same principles, and may indeed be converted into sugar, as was lately discovered; and gluten differs only by containing azote, in addition to the carbon, oxygen, and hydrogen.

In a word, all substances of this kind which can be discovered in the soil, or in the water diffused through it, may be resolved into water, carbon, and azote: and hence it is of less consequence for our present purpose to notice separately every compound that might be enumerated.

Recapitulation, and Proof from the Sap.—It hence appears, that the chief food of plants is carbonic acid gas, atmospheric air, and the humates of potass and lime mixed with water, and presented to the spongelets or suckers at the tip of the root fibres, to be thence carried into the interior of the plants. The examination of the sap as it rises from the root into the inner bark of a tree confirms the truth of these statements.

This sap is usually found to be a clear fluid, of a pleasant taste, readily fermenting, and, in that case, giving out, at first carbonic acid gas, and afterwards some azote. The chief portion of the sap is water, and it only differs from the moisture of the soil by acquiring in its passage upwards a portion of thicker fluid, which probably acts a part similar to the saliva of animals, mixed with the food in chewing, or to the digestive fluid in the animal stomach. By means of this, the sap becomes thicker the higher it rises.

Besides tangible substances, there are other important principles, which, if they do not serve as food, are as useful, by way of stimulants, as salt is to us, and as chemical agents for digesting the food of plants are quite indispensable; I refer to light and heat, to which electricity may be subjoined.

Light.—It is common with gardeners to expose their tender frame plants gradually to the open air, by taking off the lights from day to day, for the purpose, it is said, of rendering them more hardy. Few of those, it is probable, who do so are aware of the principal agent which renders the plants more hardy, and which, if I mistake not, is generally supposed to be cold or fresh air. This, there can be no doubt, assists in the process, and is indispensible to its perfection; but there can be as little doubt that light is the main agent, as a few facts and a little reflection will prove.

The process of blanching salads—(technically, *etiolation*, a pedantic term in English, and quite useless)—depends chiefly on depriving the plant of light, by earthing up a portion of the stem, as practised with celery; by tying up the tops of the leaves, as is done with lettuce; or by covering them with inverted pots, as is done with sea kale. In all these cases, the plants are crisp, watery, and tender, compared with others not thus treated, but similar in all other circumstances, which are stringy and tough in their fibres, less juicy, and therefore hardy. No exposure to cold or fresh air would produce this toughness and hardiness, if the plants were kept in the dark; and no absence of cold or fresh air would produce blanching, if a strong light were admitted.

Complete blanching is only produced by complete exclusion of the light; but its partial exclusion causes plants to be pale and sickly, as in the shade of thick woods, or plants in a stove or green-house accidentally placed so as to be shaded by others. In all such cases, plants are popularly said to be *drawn*, that is, they endeavor to push their branches as much as possible into the light, and being from deficiency thereof proportionably feeble, they increase in length without at the same time acquiring strength. A potato in a dark cellar will in this way send out shoots of some yards in length, but not much thicker than a writing quill. It is on this account that the glass frames in hot-houses ought to be as thin as possible, and therefore iron is preferable to wood. More light also will pass through a sloping or level frame than through an upright one, and through a domed or curved roof than one that is plain; because the rays of light always go in straight lines from the sun.

This singular propensity of plants to turn to the light has been supposed to indicate something akin to animal instinct; but when the cause is closely examined, this will not appear to be better founded than that of a piece of writing paper bending into a semi-circle when held to the fire; for both the motion of the plant and of the paper depend on the same cause—namely, the hardening and stiffening of one side while the other remains soft and flexible. In the case of the paper the side next the fire has its moisture carried off by evaporation more rapidly than the other side; and in the case of the plant, the side most exposed to the light is in the same way rendered more firm, contracted, and shorter than the one less exposed. The very long shoots of the potato in the dark cellar seem to be caused by the softness of the blanched substance offering no resistance by contraction to the lengthening out of the parts.

It will follow that all color, flavor, smell, and nutritive qualities, depend for their production chiefly on the action of light. The red color of forced rhubarb, which seems to be an exception, arises from the red matter previously produced by the agency of light being carried up from the root.

It hence appears than the study of the laws and action of light is of the first importance to a correct knowledge of scientific gardening, as will further appear when we come to consider the use of leaves.

Heat.—As it has been shown that the food of plants, in order to be available, must be fluid; and, as heat is the cause of fluidity, its primary importance to vegetation must be obvious, for no plant could take up frozen liquids. The processes, moreover, of fermentation and putrefaction, by which are produced the supply of carbonic acid gas, humic acid, and azote, indispensable to vegetation, cannot go on without warmth. It is well known, for instance, that beer cannot be brewed in frosty weather, because a due degree of fermentation cannot be effected on account of the cold.

The effect of heat on plants is very beautifully proved by the experiment of Du Hamel, on the rising of the sap in vines in spring. On a frosty day, when the sun shone on a cut vine, the sap flowed on the south side exposed to the sun, but not on the north side where it was in the shade. In Canada, also, where the frost is long and severe, maples, when wounded, begin to bleed with the first thaw, but stop again should frost recur, though on the south sides the bleeding goes on, at least during sunshine. It is on this account, in some northern climates, where the long sunny days succeed the thawing of the snows, as in Norway and Russia, that the gardeners are said to shade their wall-trees from the mid-day sun in the spring, to prevent the sap being prematurely raised and again checked by the certain cold of the succeeding night, and which also retards the flowering till there is less danger from spring frosts.

Did these effects of heat, which must also in part be attributed to light, require any proof, it may be shown by two wine-glasses, the one filled with hot and another with cold water, in each of which is placed a similar hollow straw, so as to discharge the water, when it will be seen that the hot water flows more rapidly than the cold.

The soil in this country, below where the frost usually penetrates, averages a temperature of forty-eight degrees, or fifteen degrees above freezing, which is the reason why springs do not freeze, and not any quality in the spring water, which will freeze readily enough when taken from the well.

It is of the utmost importance to be acquainted with what is termed the *radiation*, that is, the spreading of heat, which arises from heat passing from a hot body to a colder one near it, as uniformly as water runs down a slope. This spreading of heat takes place between the surface of the ground and the air; and when the air is cold, though the soil be warm, it soon loses its heat, and dew or hoar frost is formed on the grass by the moisture diffused in the air, though previously invisible, becoming condensed or frozen. But when the sky is covered by clouds, this spreading and loss of heat is in a great measure prevented, and hence there is no dew nor hoar frost formed on a calm cloudy night.

It is on this principle, that garden plants are protected by matting, which stops the heat of the soil from spreading about and being lost in the air. Dr. Wells proved this principle by stretching a very thin cambric handkerchief two feet square, six inches above a grass plat; and he found on one night that it was five degrees warmer under the handkerchief than the rest of the grass plat; and on another night, there were eight degrees of difference. Hence great thickness does not seem to be so important in such cases.

It is on the same principle, that snow affords a protection from the severity of frost, the plants under snow having been found by Dr. Darwin to indicate forty degrees, that is eight degrees above freezing; hence some Alpine and Siberian plants, such as auriculas, do not bear exposure to frosts when unprotected by snow, so well as those which are natives of a warmer clime, and require artificial shelter.

It may be remarked, that hoar frost is never seen on a sloping edge bank, on the side of an earthed-up row of celery, nor close to a garden wall, unless when the surface is already frozen, and that such places are always the first to thaw, beginning with the summit of a slope, evidently because the slope is most favorable to the spreading of heat, while the garden wall stops it, in the same way as Dr. Wells' handkerchief did. Hence broad coping-stones on walls are excellent for protecting wall trees.

The evaporation of water is so strongly productive of cold, from the water requiring much heat to expand it, which it of course carries off into the air, that in the hot climate of India, ice is for the purposes of luxury actually procured in considerable quantity by exposing unboiled pump water in broad shallow earthen pans placed on dry straw, on calm cloudless nights to the open sky.

It is from the rapid increase of cold by evaporation, that we account for the injury produced by watering plants when a warm dry wind blows, or during bright sunshine, which is popularly termed *scorching*, though it is not the heat that affects them, but the cold caused by the water carrying off the heat as it rises in form of vapor into the air.

I need scarcely allude to the extensive use which is made of artificial heat in rearing the plants of warm climates, as well as in the various modes of forcing, for proof of its being of the first importance for every gardener to study the laws by which its distri-

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bution is regulated, and the means by which this may be artificially economised in gardens both in the open ground and in plant houses.

NEW-YORK FARMER.

MAY 1, 1834.

THE WEATHER FOR APRIL.—In the early part of the month there were several days very fine for ploughing and planting, and there were many seeds put in the ground, particularly early garden crops for market. The cold and rain, after the 20th, have doubtless made it necessary to replant a great portion of the beans and other tender seeds that were planted early. On the 25th there were flakes of snow for several hours in the morning. For grass, the season has been thus far favorable.

Advices from Norfolk, Va., state that the heavy and cold rains have injured, and in some instances destroyed, the corn.

On the morning of the 26th there was ice, and during the day rain accompanied with some snow. Altogether, the latter part of April has been very unpropitious. Some gardens were in a very forward state as early as the 20th, and in many instances all the tender plants have either been destroyed or greatly injured. Peach trees, which were considerably forward, will probably suffer.

STATE OF TRADE IN APRIL.—During the early part of the month, produce, stocks, and goods, were depressed in prices and slow of sale. After the 12th, flour, stocks, and business generally, appeared to revive and manifest a little animation. But trade generally is dull —there are no operations to call forth skill and enterprize, nor to give encouragement to capital. All that is wanting, all that is demanded, by the country, is confidence. This is in the power of our rulers to give—this every man has a right to demand.

We make an extract from the Farmer's Register, of April 10, published at Richmond, Va.

The commerce of Virginia, and of the states north of her, is at this moment limited chiefly to the small business which must at all times exist—that of supplying the demand for articles of necessity, and of daily consumption, and the sale of so much of the produce of the country as will pay for those articles, in whole or in part. The activity and expansion heretofore so evident in all branches of industry, can no longer be perceived.

Our exporting merchants can engage in no large operations. Those whose funds are abroad cannot at the moment convert them into money at home, unless at so heavy a sacrifice by the sale of bills of exchange, as the temptation of a large profit would alone induce; and, consequently, if they purchase our produce, it must be at low prices. On the other hand, the planter, or farmer, is equally unwilling to be the party to make the sacrifice, and of course an unusually small portion of business is transacted.

Another class of merchants, whose funds are scattered among their customers at home, cannot make collections, because the price of produce is low; or if they have large stocks of goods on hand, the diminished demand equally deprives them of the usual means to meet their engagements.

The commercial system, and consequently the agricultural and the manufacturing, are heavily depressed. Prudence induces some, and necessity compels many, to suspend their usual operations. The moving power of capital is wanted, and all parts dependent on it are necessarily idle. Poverty and want ensue, and these prevail to a great extent in those communities which heretofore have exhibited the greatest industry. It is not the rich who suffer most, under such circumstances. The wealthy man, engaged in active business, may (if compelled to remain idle,) see his capital diminished; but the poor man, who from the same cause is deprived of employment, must feel extreme privation.

With a tariff modified to comparatively moderate duties, such is the pressure on many of the merchants, that they have ceased to import; and others, to whom goods were shipped on consignment, have in several instances returned them, rather than pay the duties, and incur the risk of bad debts on their sales. The treble effect of this is—first, to reduce the revenue; secondly, to deprive us of the usual supply of useful commodities, (these acting more powerfully than a high tariff—indeed equal to a prohibitory one;) and thirdly, to diminish the demand for our own produce, which would of course be shipped, to pay for importations from abroad.

Our millers have large quantities of flour on hand, which cannot be sold unless at ruinous prices. It is true that the unprecedented low price of $3.75 to $4.50 per barrel induced some merchants to speculate in New-York, and caused a small advance.

Tobacco sells at $3 to $7. Cotton at 10½ to 11½ cents. The state of foreign markets would in ordinary times cause these articles to be from 10 to 20 per cent. higher, exclusive of the home demand, which has been greatly diminished by the closing of manufactories. Stocks in our State Banks, which have been a favorite investment for many years past, and were a few months ago worth $114, were recently sold below par.

A recent operation will show the state of our commercial relations, and the contrast they exhibit to those of England. A loan to the state of Pennsylvania, bearing five per ct. interest, was contracted for within the last eighteen months, by American capitalists, at a premium of 13½ per cent. Instalments, to the amount of some millions, were punctually paid, but the subversion of the money concerns of the country deprived the contractors of the usual means of negociation, and the last instalment remained unpaid. It was advertised for sale, and not sold for some time. At the same moment, money in England was so plentiful, that the East India company loaned to a noted capitalist a sum equal to ten millions of dollars, at an interest of 2½ per cent. per annum. He could purchase dollars, and ship them to this country, to cost about ninety-two cents. He became the purchaser of the forfeited portion of the Pennsylvania loan, at one-fourth of one per cent. above par—thus receiving $5 per annum, for the use of $92.25, while he is paying $2½ per annum for the use of $100. The state of Pennsylvania, or one of her citizens, thus loses, while a foreigner steps in and makes the profit. The currency of the one country is deranged: the currency of the other is in its regular course. Indeed, at this time, the profits of our commerce are to a great extent thrown into the hands of foreigners, whose capital, unembarrassed by a sudden change, is employed on terms prescribed by themselves.

SKINLESS OATS.—*D. K. Minor, Esq.*: Dear Sir,—In the spring of 1832, I, by accident, obtained a small parcel (about a table spoonful) of the skinless oat, said to have been brought from Siberia, in the north of Europe.

I have taken much pains to learn something particular of their origin, but have not been able to find any person who has the least knowledge, or had ever before heard or seen of them.

They appear, while growing and at maturity, (the stalk, head, &c.) precisely as our common oat, but larger.

From the two years erience I have had, I am convinced that they are well adapted to our soil and climate, and require nothing more than the ordinary process practised in raising our common black oats, except one-half the seed is sufficient for any given quantity of ground, and the product will be double in weight to our common oat.

Having noticed in the New-York Farmer, vol. vii, number 1, page 26, an acconnt of there having been a specimen of them offered at the Agricultural Society at Warwickshire, England, as being scarcely before known in Great Britain, I have therefore taken the liberty of sending to you a small parcel of my second year's crop. I have about three bushels to sow this spring, from which I am in hopes to reap a crop sufficient to give a pretty extensive distribution, and soon get this valuable grain in common use.

Very respectfully, your obedient servant,

A. THORP.

Albany, April 10, 1834.

REMARKS.—We have divided the "small parcel" which Mr. T. has had the goodness to send, into portions as large as that from which he has obtained his three bushels. Any subscriber to the Farmer may have a paper by applying to the seed store, 81 Barclay street. We believe these oats may be had at several of the seed stores, at about 37½ cents per quart. C. Henry Hall, Esq., informs us he is, this spring, sowing several acres. Fifteen bushels, imported from England this spring, sold for $7.50 per bushel.

RYE GRASS—WINTER WHEAT.—[*Extract from Private Correspondence.*]—By lending some numbers to my neighbors, I have prevailed on one of them to take the Farmer. Four of us attempted two or three times to form an agricultural society in this town, about six years ago, but did not succeed. This is not a grain county, but principally adapted to stock and grazing. I would like to know if any, and where, the Italian rye grass is raised or sold in this State. I brought rye grass seed from Scotland, but it came to nothing. Our timothy and clover do not come together, and I think there is neither milk nor much nourishment in the former. I should like to know more about the success they have with winter wheat kept frozen in winter and sown in the spring.

JAMES THOMPSON, Jr.

Bovina, N. Y., March 8, 1834.

REMARKS.—Mr. T. and his friends must embrace some favorable opportunity to organize their society. Perseverance will accomplish wonders. We should be obliged to Wm. R. Prince & Sons to give information, through the Farmer, relative to the rye grass. The article on frozen wheat is in Vol. VII., page 57, of the N. Y. Farmer.

GAMA GRASS SEED.—We are indebted to the Editor of the Farmer's Register for a small quantity of this seed. Any subscriber to the N. Y. Farmer may have three seeds—all which we can offer from our small stock transmitted by mail—by applying at 81 Barclay street.

TOBACCO SEED.—We have received from Mr. Pascalis several pounds of Cuba tobacco seed, selected by Dr. Anderson as the best cultivated in that Island. Any subscriber to the New-York Farmer may have a portion of it by applying to the seed store, 81 Barclay street.

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SILK FROM THE WHITE AND THE CHINESE MULBERRY.—From the information which we have laid before our readers in the volumes of the New-York Farmer, they doubtless have become convinced that the Chinese mulberry, Morus multicaulis, has several decided advantages over the Italian white, Morus alba. The only point which remained unsettled was the relative value of the silk. On this we are now enabled to throw some light—amply sufficient, in our view, to settle the relative merits of the two species.

At our request Miss Parmentier furnished us with twenty cocoons, the worms of which had been fed on the M. multicaulis. Mr. Bottum, an experienced silk manufacturer, selected the same number from a quantity of a good quality fed on the M. alba. He reeled them with his well constructed reel, (see page 129,) keeping up the thread as near as possible to fifteen fibres. The cocoons from the M. multicaulis, being thicker, made the longest thread. We repeatedly tried the strength of the two threads, and found in every instance that the M. multicaulis would raise 4½ to 4¾ ounces, while that from the M. alba would seldom go as high as 4½. As it respects brightness and gloss, and every other requisite in good silk, if any difference, it was in favor of the former. On the supposition that the superiority of the cocoons from the Chinese mulberry is owing to the care with which Miss P. fed and reared her worms, we are on the safe side when we consider them to make silk fully equal to the others. The numerous advantages, then, of the trees themselves, will render it highly expedient, if not indispensable, to cultivate them.

We will mention here a little incident somewhat apropos. The moment Mr. B., who had never seen a cocoon from the M. multicaulis, took into his fingers one of these cocoons, his face became flushed, and soon after pale—such were his emotions, knowing the instant he touched it what was the quality.

SARRACENIA.—A correspondent in England writes, "You will oblige me if you will mention the price of the Sarracenia flava rubra, and S. adunca, and all the family of them excepting the S. purpurea, which I have got. Have you the Nepenthes distillatoria, or pitcher plant?"

Any florist, who can supply a quantity of the above, will confer a favor by sending us prices.

BEES.—In want of a better article, a flower pot may be put on the top of a hive, for the bees to fill with honey.

In tropical climates these industrious creatures, like the human race, become less active, and lay up little or no provision in one season for another.

SOWING FLOWER SEEDS.—Florists carefully sift the soil in which they sow small flower seeds, and then sprinkle over some fine sand. These seeds are generally sown in pots, and the young afterwards removed to their beds. The following is from the New-England Farmer.

Mr. Editor: One of the principal causes of the failure of many seeds is the hardening of the surface of the ground by rains or watering, so that the young plant is unable to rise through the soil. Last spring it occurred to me that this might easily be prevented by the use of a little sand. I first covered my delicate flower seeds, &c. very slightly, or not at all, with the common earth of the garden, then strewed fine sand upon them, about an inch deep, and watered heavily and frequently upon the sand. I found it to entirely answer my expectations. Out of forty kinds of flower seeds I had lost very many every season.

WOODFORD'S NEW EARLY GREEN MARROW PEA.—Without exception this is the handsomest pea we ever saw. Even when one or more years old, they retain their brightness, plumpness, and rich green color. They grow from three to four feet high, and are very productive, having nine or ten large peas in a pod. From their appearance and softness, we should suppose them excellent for boiling all the year round. They are the only early green pea that is grown.

They can be had at 81 Barclay street, and we suppose at most of the other seed stores in the city.

GRASS AND FLOWER SEEDS.—Extract of a letter to H. Huxley & Co., from a seedsman in the west of England.

"I have just finished your order, and have given all new seeds. I don't know whether I have done right in sending you a parcel of each of the natural grasses we have. We have no sweet vernal, or else I would have sent a sample. We have written to several houses in London, and cannot procure any. It is impossible for us to do without it. The Trifolium, flesh-colored clover, is now very much grown in this part of the country. The Devon Evas, I believe, is a very superior evergreen perennial ryegrass. We received only a sack a few days back, and therefore I have not been able to learn the particulars of it. We have been very busy since Christmas, not having a minute to spare. There has been more business done in the garden seed line than I ever knew.

"I send you two papers of flower seeds, one of white Virginian stock, and one of the red Turkey Aster. We had them flowering in the nursery last year. They looked far better than the Dahlias did when they were out in the boxes."

TRANSPLANTING IMPLEMENTS.—Many farmers and gardeners prefer transplanting some field and garden crops, for various reasons, particularly on account of the greater certainty and yield of the crops. Turnips, which are so liable to be cut off by insects, and by turkies, are, by transplanting, rendered as certain as most other field crops. In the New-England Farmer we find the subjoined notice of simple implements:

Several complicated transplanting instruments, consisting of several pieces, are described in the books, but I believe that one which I made and used last summer will be found to answer almost every purpose. It consists of a simple cylinder of tin plate, equal throughout, the top edge being turned over so as not to cut the hand. They may be made of any size, but the best for ordinary purposes are about 8 or 10 inches high, and 4 or 5 in diameter. It is placed over the young plant about to be removed, and pushed down a few inches into the soil, nearly or quite to the bottom of the roots; it is then taken up, bringing the earth and plant with it. Being then carried to the place where it is wished to set the plant, and the hole being previously made to receive it, it is set in the hole, and a few strokes from the digger on the outside loosens it, and leaves the plant erect in its place, with all the earth in a circular mass about it, when the transplanter is removed. The ease and neatness with which the operation is performed is very striking. A plant may be kept in the transplanter for several days uninjured, and carried to almost any distance. I have sent to Mr. Barrett three transplanters of different sizes, which will perhaps explain themselves better than my description. WILLIAM OAKES.

Ipswich, April 8, 1834.

Since the above notice we have been introduced to another implement for the same purpose, invented by a Mr. Smith, and which is for sale at the Boston Agricultural Warehouse. This machine is so fitted with a moveable slanting side, that the communication between the plant and the earth in which it grew, except a portion of soil attached to the roots, is cut off at the bottom as well as the sides, by which means on withdrawing the implement, the extraction of the plant, and a quantity of attached soil in which it grew, is rendered certain.

STRAWBERRIES IN FLORIDA.—Strawberries were in the market at Tallahassee, Florida, in the month of March. New potatoes had also made their appearance.

LOCUSTS.—According to the prevailing notion, these insects are to return this season being the 17th year since their former appearance.

SALT FOR ASPARAGUS.—Mr. Dean says, "To a bed fifty feet by six, a bushel of salt may be safely applied before the plants start in the spring." It is recommended to sow salt on the bed after the plants have started, if it has not been applied before. Watering with salt and water would probably have full as good effect.

PRODUCE FROM COXSACKIE.—We are fearful we shall not have the pleasure of reporting so favorably of the present season.

Coxsackie Landing is one of the most flourishing villages on the Hudson. In addition to the sloops employed by the enterprising merchants of that place during the past year, 25 in number, two lines of tow-boats, two boats in each line, have been established there, and will be in operation early in the present season. The principal exports from that place are brick, lime, stone, wood, hay, &c. Some idea of its local trade may be formed from the fact that 15,000,000 brick, 17,000 casks lime, 473,45[illegible] feet flagging and paving stone, 5,600 tons hay and 3,750 cords wood, were shipped during the last year.

Stuyvesant is another large and flourishing village, a few miles above Coxsackie, on the opposite side of the Hudson. The Stuyvesant and Coxsackie steamboat United States, with its barges, commenced its regular trips on the 12th inst.

CANAL TOLLS.—Since the opening of the canals, the amount of tolls paid to the collector at Albany has averaged about fifteen hundred dollars per day, up to and including the 24th instant, and the receipts have been gradually increasing from day to day. On the 25th, the amount received was $2,300, and probably about the same on Saturday, the 26th. The receipts at this place, thus far, although less than last year, are fully equal to the total for the corresponding period in 1832—notwithstanding the diminution of the receipts by reduction in the rates of toll, since 1832, about 35 per cent.

During the first week of navigation, there has been received for tolls at Geneva, the sum of $3,159 44—and at Salina, the sum of $6,583 70. These are the most conclusive indications that the real elements of our prosperity are unimpaired.

[The above is from the Albany Argus. The editor undoubtedly thinks the people are under great obligations of gratitude to somebody because the "*real elements*" of the country prosperity are not also gone.]

NEW-YORK COUNTY AGRICULTURAL SOCIETY.—At a meeting of this Society on the 15th ult., C. Henry Hall and S. Fleet were appointed a committee to report, four weeks from that date, in reference to arrangements for a Fair in October next.

AGRICULTURAL SOCIETY OF ONEIDA COUNTY.—At a meeting of delegates and others from the several towns of the county of Oneida, (pursuant to the recommendation of a meeting of the citizens of the town of Kirkland,) held at the house of Lewis Berry, in Whitestown, for the purpose of forming an Agricultural Society for said county, Mr. Stephen F. Blackstone, of Kirkland, was called to the chair, and Milton D. Parker, of Utica, was appointed Secretary, when Dr. Josiah Noyes, of Kirkland, having fully explained the objects of the meeting, on motion of Mr. Lyman, a committee, consisting of Messrs. Noyes, Goodsell, Richardson, Walker, and Lyman, was appointed to report a plan of organization.

The committee, after due consideration, reported the following plan and resolutions, which were adopted by the meeting.

Resolved, That, in the opinion of this meeting, it is expedient to form an Agricultural Board for the county of Oneida.

Resolved, That the following plan, for the organization of such Board, be adopted.

1. The Board shall consist of from one to three members from each town in the county, to be elected at each annual town meeting.

2. The officers of the Board shall consist of a President, four vice-presidents, a recording secretary, a corresponding secretary, and a treasurer; to be chosen at the regular meetings of the Board, which shall be held, unless otherwise ordered, on the last Wednesday in March of each year, and in the selection of which officers the Board shall not be confined to their own members.

3. The Board shall annually appoint the time and place of its meetings, and for the annual exhibition or fair; and by committee, or otherwise, publish a catalogue of proper objects for premiums.

4. The premiums shall consist of gold or silver plate, medals, money, or honorary notices, as the committee may designate. The President, with a committee or committees, to be appointed by the Board, to award the premiums at the time of the fair.

5. The funds of the Board to consist of such sums as the committee on premiums shall require to be paid on the entrance of articles for premiums, and such donations as may be made by individuals—the donors being allowed to specify the articles to which the money shall be awarded.

6. This plan may be altered or amended at any time the Board shall deem it expedient.

The delegates present then proceeded to elect the following officers for the present year, viz.

Josiah Noyes, of Kirkland, President.

Ephraim Perkins, of Trenton; Henry Ware, Jr., of Western; Stephen F. Blackstone, Kirkland; Charles Coolidge, of Paris: Vice-Presidents.

Thomas Goodsell, of Utica, Corresponding Secretary.

Milton D. Parker, of Utica, Recording Secretary.

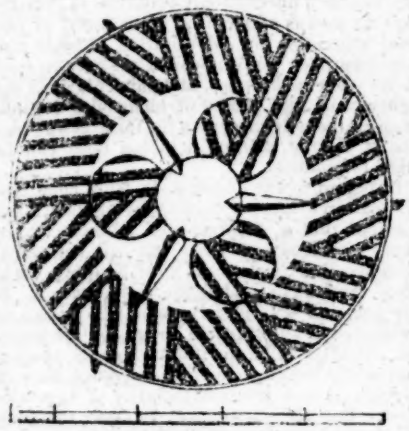
Montgomery Hunt, of Utica, Treasurer.

The delegates, after passing resolutions in relation to the publication of these proceedings by the Recording Secretary, then adjourned *sine die*.

BANGOR HORTICULTURAL SOCIETY.—We see the following notice, one of the numerous benefits of horticultural associations. Let those in other parts of the country follow suit. Those who took notice of the proceedings of the last Legislature will recollect that such a society as the above was incorporated. Who were its originators, or what their purpose, was but recently understood. It is now given out, that it is their intention to procure a suitable spot in this vicinity for horticultural and culinary purposes, that the Bangor market may be supplied with whatever this climate can afford.

In connection with this they have another equally laudable object, viz.: that of procuring some suitable site for a cemetery, on the plan of Mount Auburn in Cambridge. The details of their plans, as well as the terms upon which membership may be obtained, will be more definitely made known hereafter by the projectors.

PUMPKINS.—A writer in the Genesee Farmer, who resides at Phelps, New-York, grows pumpkins 20 to 30 inches in length, and one foot in diameter. "The substance of them is thicker than the common, of a fine texture, and very evidently sweeter."



GREAT IMPROVEMENT IN MILL STONES.—The accompanying drawing represents an improvement in mill stones, which, from the following certificates, would seem to be of very great importance. It consists principally in letting in the air, as is denoted in the drawing, on the flour while grinding, and in expediting the operation. The patentee, James Preslow, and the original purchaser, George B. Jeffery, reside at Auburn.

Auburn, April 1, 1833.

We certify that the patent of James Preslow, for an improvement on mill stones, for facilitating the grinding of grain, &c., has been in operation in our mill at Auburn for several months, which we consider a valuable improvement; it more than doubles the grinding, grinds much cooler, and separates the flour altogether better in the bolts, and greatly improves the quality.

CARHART & POLHEMUS.

Auburn, March 18, 1833.

We, the subscribers, having examined the plan for which James Preslow has obtained a patent for the discovery of an improvement of preparing mill stones to expedite the grinding of grain, and also seen an experiment of the grinding of grain at the mills of Carhart and Polhemus, in the village of Auburn, with mill stones prepared and dressed according to the improvement for which said patent is obtained, do hereby certify that we were present at said mills, and saw fifteen and a half bushels of wheat ground with one run of stones in a superior manner, for flour, within the space of one hour.

AMBROSE COCK,
I. S. MILLER,
E. MILLER.

Pitcher, Chenango co., N. Y. January 8, 1833.

In answer to your inquiries how I succeed with your patent for mill stones, and if I am still pleased with the improvement, I cheerfully answer, that since you put your dress on my mill stones, in May last, I have continued to use it; and, as I stated at the time, it more than doubled my grinding; and also done better work in grinding cooler and bolting better. I still assure you that my mill now does more than double the business it ever done before your dress was put on the stones; and I have no hesitation in recommending it as a valuable improvement to all those concerned in the milling business. ABEL CHANDLER.

Ithaca Mills, April 12, 1833.

At the request of James Preslow, the patentee for mill stones improved, I can cheerfully and confidently say, that stones put in order by him at the Ithaca mills, grind cooler and faster than any stones of their kind I have ever seen. The meal too bolts very free and clear.

His plan for the admission of air, and the preparation of grain near the eye, for its reception into the skirts or flouring parts of the stone, is of great utility for flouring, as well as tends to add power by doing the business near the eye; which is too often left to be done by the more extended parts of the stones from the spindle. Added to this, the stones will undoubtedly keep sharp longer, by being cool, than by being heated up by the want of air. A. BEEBE.

Upper Lisle, May 19, 1833.

It accelerates the grinding, with the same head of water, one half or more. It also tends to cool the meal, which bolts better than formerly. And I am fully satisfied it is a very important improvement to all concerned in grinding. JUDGE GEORGE WHEELER.

Big Flats, Tioga co., May 9, 1833.

It more than *doubles* the grinding, grinds much cooler, and separates the flour altogether better in the bolts, and greatly *improves* the grinding. JOHN SHARP.

Manlius, May 18, 1833.

We, the subscribers, having had our plaster mill stones dressed by Mr. James Preslow, according to his method of dressing, and from the experiment do believe it to be the greatest improvement that has ever been offered to the public, feel bound to say in this certificate, that by the experiment tried, our mill ground twice the quantity in the same given time, and equally fine. And we believe that in dressing plaster mill stones according to said Preslow's method, that the quantity can be quite or nearly doubled, we therefore cordially recommend it to the patronage of the public.

JACOB R. DE PREY,
JAMES I. D'ELERY.

Milford, June 4, 1833.

Fifty-two bushels and a half in four hours and forty-nine minutes, the flour very good. We have no hesitation in recommending the improvement, from our own experiment as well as from the science and respectability of the gentlemen engaged in the improvement.

DISBOROUGH & LUDLOW.

Long Island, Queens co., Newtown, July 30, 1833.

This is to certify, that George B. Jefferys has dressed one run of my mill stones, according to James Preslow's method, which he has secured to himself by letters patent. And I have no hesitation in recommending it to all persons interested in the milling business, as well worthy of adoption. It accelerates the grinding from fifty to sixty per cent.; it also tends to grind much cooler, and the meal bolts freer than it formerly did; and I am fully satisfied it is a very important improvement to all concerned in grinding, &c. DANIEL D. RAPALGE,
Signed by DANIEL L. RAPALGE.

Ithaca, December 19, 1833.

It prevents entirely a great difficulty in the usual manner of dressing, *the clogging in the eye*, keeps much cooler and grinds much faster, and on the whole I consider it a fine improvement, and worthy the attention of men engaged in the milling business. J. M. M'CORMICK.

Application may be made to Mrs. White, corner of Beekman and Pearl streets, New-York.

ZINC WARE.—In former volumes of the Farmer this ware, after having been strongly recommended, was brought into discredit. We perceive that it is again obtaining practical approbation.

FARM SCHOOL OF BOSTON.—The following gentlemen were elected on Monday, to the government of the Boston Farm School—Charles Jackson, President; Charles C. Paine, Secretary; George Ticknor, Treasurer; Thomas B. Wales, John Tappan, John D. Williams, Moses Grant, T. C. Carey, Charles Wells, Jonathan Phillips, Joseph Tuckerman, George W. Beale, Directors.—[Merc. Journal.]

Address of JESSE BUEL, *President of the New-York State Agricultural Society, delivered at the Annual Meeting, February* 12, 1834.

We have associated, gentlemen, to increase the pleasures and profits of rural labor—to enlarge the sphere of useful knowledge—and, by concentrating our energies, to give to them greater effect in advancing the public good. In no country does the agricultural bear so great a proportion to the whole population as in this. In England one-third of the inhabitants only are employed in husbandry; in France two-thirds; in Italy a little more than three-fourths;* while in the United States the agricultural portion probably exceeds five-sixths. And in no country does the agricultural population exercise such a controlling political power, contribute so much to the wealth, or tend so strongly to give an impress to the character of a nation, as in the United States. Hence it may be truly said of us, that our agriculture is our nursing mother, which nurtures, and gives growth, and wealth, and character, to our country. It may be regarded as the great wheel which moves all the machinery of society, and that whatever gives to this a new impulse or energy communicates a corresponding impetus to the thousand minor wheels of interest which it propels and regulates. Knowing no party, and confined to no sect, its benefits and its blessings, like the dews of Heaven, fall upon all. Indentified then, as agriculture is, with the interests of every department in society, it becomes *our* profession, in particular, to endeavor to enlighten its labors, to remedy its defects, and to accelerate its improvement.

Of the multitude of objects which present themselves as worthy of our consideration, I can only embrace a few of the most prominent ones in the subject matter of this address. I shall particularly invite your attention to

The economy and application of manures;

The improvement of farm implements and machines;

The advantages of draining;

The defects which exist in the present mode of managing our hop and barley crops;

The division of labor;

The introduction of new articles of culture; and

To some illustration of the comparative profits of good and bad husbandry.

Manures.—If we consider that all animal and vegetable substances are susceptible of being converted into manure, or food for farm crops, and reflect upon the great quantity of these which are wasted upon a farm; and if we add to these considerations the fact, now well established by chemical experiment, that yard dung loses a large portion of its fertilizing properties, in the gases which escape, where fermentation is suffered to exhaust its powers upon it in a mass, we may be able to appreciate, in some measure, the great defects which exist in our general management of this all important material. Manures are a principal source of fertility. They are to our crops what hay and forage are to our cattle—the food which is to nourish and perfect their growth. Continual cropping, without manure, as certainly exhausts land of its fertility, as constant draining from a cistern that is never replenished exhausts the water which it contains. The practice of some, who, disregarding one of the soundest rules of farming, continue to crop without manuring, till the soil will no longer yield a return to pay for the labor, is upon a par with that of the man who undertook to teach his horses to live without food: just as the experiment was about to succeed, the horse died. A considerable portion of the lands in Virginia and Maryland, which were originally fertile, have in this way been injudiciously exhausted, and thrown into commons as not worth enclosing. I lately received a letter from a young gentleman in the former state, soliciting my advice as to the means best adapted to restore fertility to two worn out farms which had recently come into his possession, and which, he stated, would no longer produce clover. It is much easier to prevent sterility than to cure it, on the same principle that it is easier to *keep* a cow in flesh when she is so, than to *restore* her to flesh after she has become wretchedly lean. In some soils, to which nature has been uncommonly bountiful in imparting the means of fertility, as in many of our river alluvions, the deterioration is slow and imperceptible; yet it nevertheless goes on even there. But in ordinary, and particularly in the lighter soils, the profits of husbandry depend, in an eminent degree, upon the faithful application of all the manure which a farm can be made to produce.

In regard to the question, in what condition are manures most economically applied, I am sensible that a difference of opinion exists, many contending, even on philosophical grounds, that it is most wise to apply them after they have undergone fermentation. If the question was merely, whether a load of fermented or unfermented dung is of the greatest intrinsic value, in ordinary cases the former would be entitled to the preference, because it contains the greatest quantity of vegetable food. But the correct way to state the question would be this: Will *five* loads of rotten manure impart greater fertility than *ten* loads that are unrotted? The numbers ought rather to be five and fifteen—for I think common dung suffers a diminution of two-thirds, instead of one-half, in volume, by a thorough process of rotting.* It will assist in determining the question, if we ascertain what the manure parts with during fermentation, for it evidently loses much in weight as well as in bulk, and whether this lost matter would, if buried in the soil, have afforded food to the crop. For if it possessed no fertilizing property, the sooner it is got rid of the better, and we save the expense of transporting it to the field. But if it really consists of prepared or digested food, fitted for the organs and wants of plants, it is truly improvident to have it wasted and lost for all useful purposes. The latter is really the case.† The matter which escapes in fermentation is vegetable matter in a gaseous form, fitted by natural process, like chyle in the animal stomach, to enter into and become a constituent in a new generation of plants. It is principally carbonic acid gas, the aliment of vegetables and the true staff of vegetable life. It has been vegetable matter, and will become vegetable matter again when brought into contact with the mouths or roots of plants. Without resorting to chemical proofs or authorities to prove this, I will suggest a mode by which the matter can be satisfactorily settled. Let any farmer, in the spring, before yard manure ferments, put twenty-five loads in a pile to rot and take another twenty-five loads to the field where he intends to plant his corn, spread it upon one acre, plough it well under, harrow the ground, and plant his seed. Let him plant another acre of corn along-side this, *without manure.* As soon as the corn is harvested carry on and spread the twenty-five loads of prepared or rotted manure left in the yard, or what remains of it, upon the acre not manured for corn, and sow both pieces to wheat. Unless my observation and practice have deceived me he will find the result of the experiment to be this: the acre dressed with long manure will yield the most wheat, because the manure has been less exhausted in the process of summer rotting, and for the reason, that in cultivating the corn, it has become better incorporated with the soil—*and it will, besides, have yielded some twenty or thirty more bushels of corn, in consequence of the gases upon which the crop here fed and thrived,* but which in the yard were dissipated by the winds and lost.

Plants, like animals, require different modifications of food. In general, the plants which afford large stocks or roots, as corn, potatoes, turnips and clover, thrive best on the gases which are given off from dung in the process of fermentation—while those exclusively cultivated for their seeds, as wheat, barley, &c. are often prejudiced by these volatile parts which cause a rank growth of straw without improving the seed. Hence the first mentioned crops may be fed on long manure without lessening its value for the second class, provided they immediately follow, and hence unfermented manures are most economically applied to hoed crops.

Different rules should govern in the application of fermented and unfermented manures. The latter should be buried at the bottom of the furrow with the plough, the former only superficially with the harrow. The reasons are these—unfermented dung operates mechanically while undergoing fermentation, in rendering the recumbent soil porous and pervious to heat and air, the great agents of decomposition and nutrition, and the gaseous or volatile parts being specifically lighter than atmospheric air, *ascend,** and supply the wants of the young roots. The next ploughing turns the residue of the dung to the surface, when it benefits on a different principle: for fermented manures consist of ponderable substances which have a tendency only to *descend.*

Manures possess a high value in all good farming districts, where the natural fertility of the soil has been impaired by culture. In most of our large towns it is bought up at one or two dollars a cord, and transported ten or twenty miles by land carriage, and much farther by water. So essential is it considered in Europe to profitable husbandry, that every material which imparts fertility is sedulously economised, and applied to the soil. Among other things, ship loads of bones are annually brought from the continent into Great Britain and ground for manure. Bone dust is in such high demand in Scotch husbandry, that its price has advanced to 3*s* 6*d* sterling per bushel.

We possess no certain data to ascertain the saving which may be introduced into this branch of farm economy; yet if we put down the number of farmers in the state at one-tenth of our population, or 200,000, and estimate that

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Babbage on the Economy of Machinery.

* During the violent fermentation which is necessary for reducing farm-yard manure to the state in which it is called *short muck*, not only a large quantity of fluid, but of gaseous matter, is lost; so much so that the dung is reduced one-half or two-thirds in weight, and the principal elastic matter disengaged is carbonic acid, with some ammonia; and both these, if retained by the moisture in the soil, as has been stated before, are capable of becoming a useful nourishment for plants.—[Davy.]

† As soon as dung begins to decompose, or rot, it throws off its volatile parts, which are the most valuable and most efficient. Dung which has fermented so as to become a mere soft cohesive mass, has generally lost from one-third to one-half of its most useful constituent elements. It evidently should be applied as soon as fermentation begins, that it may exert its full action upon the plant, and lose none of its nutritive powers.—[Davy.]

* A friend made this experiment: He trenched a quarter of his garden, and deposited a layer of *dry straw*, three inches thick, one foot below the surface, as the only manure, and planted it with water-melons. The crop, he said, was the finest he ever grew. On examining the straw in autumn, he found it was completely rotted, and reduced to the condition of short muck. He was satisfied that his melons had been highly benefitted by the straw while undergoing fermentation, and that had the straw rotted in the yard, the volatile portion of the manure would have been wholly lost.

PRINT IN BINDING

an average increase of five loads upon each farm might annually be made, it will give us a total of one million loads, which, at the very moderate price of 25 cents, would amount to $250,000 per annum.

Farm Implements.—We must all have noticed the great improvements which a few years have made in the mechanic and manufacturing arts. Scarcely a process is managed as it was twenty years ago. Scarcely an old machine but has undergone improvements, or given place to a better model. Manufacturing operations have been simplified and abridged, and human labor has been reduced to a comparative cypher, by the substitution of machinery and the power of steam. The effect has been a great reduction in the price of manufactured commodities, and an increase in their consumption. We are assured that during the twelve years which elapsed between 1818 and 1830, Sheffield wares—hardware and cutlery—experienced an average reduction in price of sixty per cent. varying upon different articles from 40 to 85 per cent. (See Babbage on the Economy of Machinery.) Cotton goods, books, and various other fabrics, have undergone a reduction no less remarkable within our time. These beneficial changes have resulted in a great measure from the aid which science has either itself imparted, or which it has elicited from mechanic skill—for a useful invention often awakens latent genius, and calls forth successful competition, even in the unlearned. No sooner is an improvement in the manufacturing arts announced, than it is adopted whenever it can be regarded beneficial—such is the facility of intercourse—such the desire—the necessity—*there*, of profiting from every discovery which benefits their art. The farmer is less able and less willing to keep pace with the march of intellect. He has few opportunities of becoming acquainted with the improvements of others, except by slow degrees; and he is so liable to be taken in by the catch-penny productions of the day, and is withal so distrustful of new experiments, that he will hardly venture to buy new implements and machines, nor to adopt new practices, however beneficial they might prove on trial. Mr. Coke tells us that his examples in farming, (and few men ever gave better,) only enlarged the circle of their influence about a mile in a year. Hence, as regards this branch of improvement, we have much to do ere we can overtake the spirit of the age, as exemplified in our sister arts.

Many of our farm implements have undergone improvements; yet there are others which have been either but partially introduced, or are hardly known, that are calculated to abridge labor and to increase the profits of the farm. There exists a great disparity in the quality of implements. In ploughs, for instance, there is a difference which eludes superficial observation, particularly in regard to the force required to propel them, that is worth regarding. I have seen this difference, in what have been termed good ploughs, amount to nearly fifty per cent. or one-half. The perfection of our implements is intimately connected with a correct application of mechanical science, a branch of knowledge hitherto too little cultivated among us. Messrs. Many & Ward, the enterprizing proprietors of an iron foundry in this city, have assured me that there are more than two hundred patterns of ploughs now in use in this state. Of this number some may be very good, but many must be comparatively bad. But what individual is able to decide upon their relative merits, or even to become acquainted with the different sorts? It would be rendering an important service to the state at large, and especially to the farming interests, if a competent board was appointed, comprising men of practical and scientific knowledge, to test thoroughly, by examination and perfectly satisfactory trial, not only the ploughs, but the other implements of husbandry now in use, or which may be hereafter invented, and to publish the result of their examination, and certify their intrinsic and relative merits. Such board might meet once or twice in a year, and no inventor or vender who had confidence in the goodness of his machine would fail to repair to the place of trial. This would tend to call into action mechanical science and skill, in the confidence of receiving a just reward; the public would confide in the trial and opinions of the board; good implements would be extensively introduced and bad ones would be discarded. The expense of the examination would bear no proportion to the public benefit.

Draining.—Few expenditures in husbandry are calculated to make better returns than those made in draining, a branch of labor which has had a very limited practice among us, and of which we have yet much to learn. Many of our best lands are permitted to remain in a comparative unproductive state, on account of the water which reposes on the surface or saturates the subsoil. To render these lands productive, even for arable purposes, it is only necessary, by well constructed and sufficient drains, to collect and carry off the surplus water which falls upon the surface or rises from springs below. The rationale of draining is briefly this: Air and heat are essential agents in preparing the food of plants which is deposited in the soil, and they are also necessary for the healthful development of most of the cultivated varieties. These agents are in a measure excluded from the soil by the water. The temperature of a soil, habitually saturated with spring water from beneath the surface, seldom exceeds 55 or 60 degrees at midsummer. Hence the grains and grasses, which require a heat of 80 or 90 degrees to bring them to a high state of excellence, can never thrive in these cold situations, where they find neither the warmth nor the food suited to their habits. But drain these soils, and they become light and porous, pervious to solar and atmospheric influence, the process of vegetable decomposition is accelerated, and a high state of fertility is developed.

One of the modern improvements in draining, which tends very much to give permanency to the work, is to dig the trench with a spade adapted to the purpose, with a wedge shaped bottom, say three inches at the bottom and five inches at the upper surface of the lower cut, and to fill this part with *broken* stone. The trench is dug two feet deep before this cut is made, and the wedge shaped bottom cleaned with a scraper fitted for the purpose. By concentrating the water it acquires force, and keeps the passage open. And if broken stone is employed, not exceeding three inches in diameter, it affords no harbor for ground mice or moles, which otherwise get in and open passages to the surface, through which water and earth are apt to enter and choke up the drain. Drains of this description are very efficient and economical to keep the bed of a road dry, placed either at its sides or in the centre, having a fall to carry off the water. A cubic yard of stone will lay about 120 feet of under drain of the dimensions above given, and 8 inches deep. The breaking of the stone will cost three or four shillings the cubic yard.

The acknowledged utility of irrigation, or of spreading, occasionally, the waters from streams or the highways over lands, has led to a misapprehension with many of the principles of draining. Irrigation is employed to furnish water to soils, generally slopes, where it is deficient, and from whence it speedily passes off, or to cover grounds in winter to exclude severe frost. The water thus employed is nearly of the warmth of the atmosphere, and is generally charged with fertilizing properties. Draining is employed upon flat surfaces, or upon slopes abounding in springs where there is an excess of water, and of a temperature which materially chills and deadens the soil. Irrigation supplies water where there is a deficiency—draining carries it off where there is an excess. Both are intended, by opposite modes, to produce the same result—a suitable degree of moisture for the wants of the crop.

We have illustrations in abundance of the advantages of draining; and so apparent have been its benefits, in districts where it had a fair trial, that a knowledge of the science, for a science it may be called, is considered an important branch of agricultural knowledge. Upon one estate in Scotland, where the farmers are generally tenants, sixty-five miles of under drains have been made within a few years, at the joint expense of the landlord and tenant. The benefits of this expenditure have been—to the landlord, an additional 5*s.* per acre upon his annual rental—and to the tenants, a more than corresponding advantage in the increase of their crops. A gentleman who deservedly ranks high in this society, and who has been a pioneer in this branch of improvement, has assured me, in answer to my inquiries, that he has applied under draining to twenty different fields, to the extent of more than two thousand rods, at the average cost of fifty cents per rod; and that he has been fully remunerated for the outlay in every instance, in the increased products of three years. In some cases, he adds, where the lands produced coarse grass of little value, and where tillage was out of the question, he has expended twenty dollars per acre in under draining, and now grows upon these lands Indian corn, oats, wheat and clover, luxuriantly. The value of this land has been increased from twenty to one hundred dollars per acre, or five hundred per cent. by the operation of draining. (See appendix A.) I have had some personal experience in this sort of improvement, and have made it the subject of calculation, and am induced to believe that where stone is convenient, efficient and *permanent* under drains may be made as low, if not lower, than what they cost my friend. A laborer accustomed to the work averaged ten rods per day upon my farm, for thirty days. The ground was sandy and soft. Other materials were substituted for stone, which would, had they been employed, have required more labor, though they had been prepared to his hands.

The benefits of under drains are not limited to lands which show water upon the surface. We may often notice at midsummer that some flat lands have a sterile and compact appearance, whose general aspect would indicate fertility. This is readily accounted for by supposing what is often known to be the fact, that the soil reposes upon a compact strata, which prevents the descent of water, and which has not sufficient inclination to pass it off. This water chills the ground, retards the decomposition of vegetable food, and causes comparative infertility. This may be effectually remedied by parallel under drains, the space between them to depend upon the compactness of the soil, a drain being supposed to collect the water nine or ten feet on each side in the most tenacious ground. It is usual where fields are thus drained to make a cross drain along the upper side, and also one along the lower side, to receive and carry off the water which the parallel drains collect from the soil.

Barley and Hops are becoming important staples of our state, particularly of the northern and western portions. Few persons, I presume, have a just conception of the quantity which we annually produce, or the immense loss we sustain for want of better knowledge and more care in cultivating and preparing these crops for market. Our soil and climate are found to be well adapted to their growth, and we have produced as fine samples of both as are grown in any part of the world. Independent of an increasing home consumption, the hop in particular is always in demand for exportation. If in good condition, it is one of the most profitable crops to the

grower that can be raised. If in bad condition, it is often a losing concern, not even affording a return for the labor bestowed in its culture.

Deeming the subject one of deep interest to the community, and as coming particularly within the province of this society, I have been at some pains to collect data from the best sources in relation to the barley and hop trade, with the view of submitting an abstract of the facts to your consideration.

Two-thirds of all the barley grown in the United States is believed to be marketed at Albany and the neighboring towns upon the Hudson. The amount brought to our market last year is estimated at 450,000 bushels. It is of two kinds—two rowed and six rowed, one possessing a thin and the other a thick skin, and larger berry, ill adapted to be malted together, as one kind malts quicker than the other, and becomes sensibly deteriorated before the saccharine matter of the other kind is fully developed. The two varieties are often mixed by the grower; but that which passes through second hands, as the merchant, boatmen, &c. is almost universally so, and is besides frequently adulterated with oats and other foreign matters, which seriously depreciate its value. It is stated that the deterioration and loss consequent upon the bad condition of the barley brought to market the last season, was equal to ten per cent. or 45,000 bushels—which, expressed in money, at 75 cents the bushel, amounts to $33,750.

Serious as our loss seems to be from the bad management of our barley, it will be found to be no less so upon our hop crop. About 2,300 bales, or 50,000 lbs., is the estimated quantity brought to market the last year. Of this quantity, I am assured by the best judges of the article, there were not 200 bales which ought to have been denominated *first sorts*. Many of the hops were imperfectly dried, and in consequence of the moisture in them when bagged, a fermentation was induced highly detrimental to their quality. The criterion by which hops are determined to be well dried is, when the stocks become perfectly shrivelled and dry. This is not found to be the case with those sent to this market, and the effect is that deterioration goes on till the hops are used, whereas well dried hops lose very little of their goodness by being kept over. Again—too much heat, particularly in the outset, is prejudicial, as it drives off with the moisture the aroma or essential oil which gives value to the hop. A great portion of our hops are picked too early, before they are sufficiently matured, while other parcels are scorched or otherwise injured in the process of curing; and although they might bear a superficial appearance of being prime, most of them on critical examination were found to be extremely deficient in the principle which gives them value. While the average price may be stated at 18 cents, many of these hops are declared not to have been worth two cents the pound.

Here, then—if the data which I have given are correct—are two of the staple productions of our soil, on which we have lost, or what amounts to the same thing, have failed to realize, from 50 to 100,000 dollars in a single year, *from carelessness, or a want of knowledge in their culture and preparation for market.* (See appendix B.) To what extent might this sum be swelled were we to embrace in this inquiry the other products and labors of husbandry! A like disparity, I apprehend, between good and bad management would be found to exist in almost every department of our agriculture.

Division of labor, although not so well adapted to farm labor as it is to the mechanic and manufacturing arts, is nevertheless susceptible of being advantageously studied and applied by the husbandman. The process of pin making is subdivided into seven branches, to each of which is assigned a distinct set of hands. The advantages which result from this arrangement may be appreciated when I state, that were the workmen who whiten the pins to perform all the different processes, they would cost in making "three times and three-quarters as much as they now do by the application of the division of labor." (See Babbage on the Economy of Machinery.) This principle is extensively adopted in manufactures, and is no inconsiderable cause of the reduction in price of their fabrics. It has been advantageously introduced in the farming of Great Britain. Men are kept as much as possible to the same branch of labor, because, by becoming familiar with it, they perform more and do it better, as a greater individual responsibility rests upon them. All light work is performed by women and children. A man who can earn six shillings should not be employed on what a boy can do equally well who is paid two shillings per day. Say a farm affords one hundred days of this kind of labor in a year—the gain to the cultivator by employing the boy instead of the man will amount to fifty dollars.

New articles of culture.—Forty years ago cotton was hardly recognized as an article of culture in the United States. In 1832 it constituted by far our greatest material of export, the quantity exceeding three hundred and twenty-two millions of pounds, and the estimated value falling but a fraction short of thirty-two millions of dollars. In addition to this, the home manufacture of the raw material now gives employment to half a million of our population, while the goods fabricated from it constitute a material source of our internal commerce. Who can pretend to say what will be the great staples of our country forty years hence? Almost every discovery in science calls into existence a new art, and almost every new art furnishes a new demand for some product of the soil. It is the province of wisdom to keep pace with the knowledge of the times, that it may profit by its constant improvements. There is already an increasing demand for products of the soil, which we have the ability to supply, but which we continue to import from Europe. Madder, woad, and weld, are essential to our manufactures, and the quantity which is consumed draws no inconsiderable amount annually from our country. Our soil and climate are adapted to their culture, and with a little enterprise and experience we may soon be able to supply the home demand. The madder now imported is computed to cost more than two millions of dollars per annum. (See page 137.)

The turnip culture will yet become, as it has proved in Britain, the basis of a great improvement in our husbandry. Turnips are at the same time an ameliorating and a cleansing crop, and are admirably fitted to precede barley or wheat. But their chief value consists in the abundant product, and the adaptation of the crop to the wants of all descriptions of farm stock, at a time when succulent food is most wanted, and when it can be but scantily supplied from other crops. The Swedish variety has a decided preference. On lands adapted to their culture, 600 bushels, or twenty tons of roots from the acre, may be stated as a moderate average crop. The greatest objection to their culture is the labor and expense of securing them for the winter use; but this is far greater in imagination than in reality. On this subject I can speak from personal experience. A neighbor raised last year, from five acres of land, three thousand bushels, which he has fed during the winter, and upon which he is now fattening more than one hundred wethers, besides oxen.

The raising of mulberry trees and the production of silk is another branch of rural labor yet new among us, which bids fair to become a source of individual and national wealth, and which the Society can enlighten and promote. The experiments already made have shown, that while the business abstracts very little labor from the ordinary employments of the farm, it is susceptible of yielding a handsome income to the farmer. The early attention of this Society in distributing seeds of the mulberry has done much towards introducing and extending this branch of labor. It is computed that the seed may have produced half a million of trees, and that this number may have been doubled by individual efforts in that time. A new species of the mulberry, (*morus multicaulis,*) has been introduced from the Phillipine islands through France, by M. Perrottet, which promises new advantages in the production of silk. The tree is as thrifty and as hardy and as easily propagated as the white mulberry, while the leaves being much larger, are far more easily gathered, and are said to be better adapted to the production of fine silk than the other species of this tree. This Asiatic mulberry was introduced into France in 1824, and in 1830 it bore seeds abundantly. I would beg leave to suggest that the corresponding secretary be instructed to procure seed of the morus multicaulis, with a view of its being distributed by this Society.

The demand for silk fabrics is already great in the United States, and is likely to increase in a far greater ratio than our population. The importation of silks in 1832 amounted to ten million dollars. As an article of export, the raw material will be in demand for the European, and the manufactured fabrics for the South American market. France imports raw silk to the value of 30 million francs, and in Great Britain the annual importation of the article exceeds 120 million dollars. Hence there is little danger of the market becoming overstocked.

The contrast in the profits of good and bad farming is worthy of a moment's notice, as few take the trouble to scan it with care. I have already alluded to the bad management of our hop crop. Had all the hops which were brought to this market the last year been equal in quality to the best, and such they probably might have been with better knowledge and more care in their management, some 20 or 30 thousand dollars might have been put in the pockets of the growers, which they failed to obtain. Let us examine what the difference is in the corn crop. I estimate the cost of cultivating and harvesting an acre of corn at fifteen dollars, and that a farmer will ordinarily plant four acres. His expense then will be sixty dollars. If the crop yields him thirty bushels an acre—and more falls short than goes over this quantity—and he sells the product at fifty cents the bushel, he will be remunerated for his labor, but get not a cent of profit. *Now, if instead of thirty, the acre was made to produce, by good management, eighty bushels, the four acres, at the assumed price, would pay for the labor and afford him a nett profit besides, of one hundred and thirty dollars.* Here then would be a difference, in one year, in the profits of four acres, of $130, all resulting from good and bad management. I beg leave here, as affording to my hands a happy illustration of the contrast I would exhibit, the *practice* of an individual who stands deservedly high as a practical farmer, and as a gentleman of respectability and veracity. I will first show what his land DID produce; and then what it DOES produce. "The land I now till, (he observes in his letter, which will be hereunto appended,) *at first*, would not produce, on an average, more than 15 or 20 bushels of corn, ten or fifteen bushels of wheat, barley, or rye, and from half a ton to one ton of hay." By good management, economizing manures, and a proper rotation of crops, he adds, "some of my fields *now yield* from 80 to 100 bushels of corn, 35 to 40 bushels of wheat, 50 to 60 of barley, and from two and a half to three and a half tons of hay per acre, *and with less labor* (except in harvest) *than when I did not raise more than one third or one quarter as much per acre as I do now.*" The same intelligence and industry, that have trebled or quadrupled the profits of this farm, will produce like results

whenever they are diffused and brought into exercise.

I have thus adverted, gentlemen, to those defects in our husbandry to which I proposed at this time to call your attention, and have endeavored to show their magnitude, and the importance of applying efficient remedies. I will now call your attention to some of the available means of placing our agriculture on a more respectable and productive basis. The means which I shall particularly commend to your notice may be embraced under the following heads:

1. A school, to illustrate the principles of science upon which the labors of Agriculture are based, and to teach the best models of practice.

2. A more general diffusion of useful knowledge, in a cheap form, accessible to the humblest condition in life.

3. Agricultural associations; and,

4. The bestowment of pecuniary rewards, as stimulants to enterprise and industry.

I need not stop to dwell upon the advantages which learning affords to agricultural labor. Science may be defined a study of the immutable laws of the Creator, which govern and regulate mind and matter. The study of these laws, and their application to the wants and comforts of life, have for ages constituted one of the highest and most useful employments of man; and have contributed, more than any other human effort, to refine and elevate us above the grosser and degraded condition of savage life. The concentrated benefits of these labors are not proffered to our hands. The pleasures and the benefits which they impart are held out as noble rewards to mental labor, in the same spirit that the blessings of health and competence are promised to him who "earns his bread by the sweat of the brow." Labor, mental or bodily, is the inseparable attendant of rational enjoyment. And is that knowledge to be contemned, which has done so much good to the world, and which has countless blessings yet in store for the human family? "In a *theological* view," says a late eminent writer, (see Dick on the Improvement of Society by the Diffusion of Knowledge,) "science is nothing else than a rational inquiry into the arrangements and operations of the Almighty, in order to trace the perfections therein displayed. And what, continues our author, are the truths which science has discovered? They may be regarded as so many rays of celestial light descending from the Great Source of Intelligence to illuminate the human mind in the knowledge of the Divine character and government, and to stimulate it to a still more vigorous exertion in similar investigations, just as the truths of revelation are so many emanations from the 'Father of Lights,' to enlighten the darkness, and to counteract the disorders of the *moral* world."

Our state may be compared to a great family, the members of which are employed in diversified pursuits, all designed and calculated to promote the common weal—having a common as well as individual object, and all united by reciprocal ties. In this light it is considered as respects crime and want. One is punished, and the other relieved, by common consent, and at the common charge. We have erected splendid and extensive establishments for the vicious and the poor. The county of Albany has been at greater expense for its poor than would be required of the state to establish and support a school of agriculture. Would it not evince both prudence and economy to endeavor to *prevent*, or to *lessen*, these growing evils in society, by devoting a portion of the common means to schools, which should teach the hands useful labor, and imbue the heart with the love of virtue? The adage teaches, that "an ounce of prevention is worth a pound of cure." If ignorance be one of the chief causes of vice, and indolence the parent of want—and if knowledge be one of the main-springs of virtuous conduct, and competence the sure reward of industry,—then the more knowledge is diffused, and the more that industry is encouraged, the less we shall be called upon to expend upon poor-houses and penitentiaries. It no longer admits of doubt, that knowledge and industry are the great conservators of public morals, as well as the great instruments of public wealth.

It has been remarked, that the more we provide for any one class, the more it will increase. This would seem to hold good in regard to the vicious propensities of our nature, and why not in regard to habits that are commendable and praiseworthy?

To speak practically. Our agriculture is greatly defective. It is susceptible of much improvement. How shall we effect this improvement? The old are *too old to learn*, or rather, to unlearn what have been the habits of their lives. The young cannot learn as they ought to learn, and as the public interests require, because we have no suitable school for their instruction. We have no place where they can be learned the *principles* upon which the *practice* of agriculture is based—none where they can be instructed in all the modern improvements of the art. It is devoutly to be hoped, that our fathers in council, justly appreciating the importance of the subject, will add another to the proud trophies which New-York has already won in the noble march of improvement, by properly responding to the correct views of this subject expressed in the message of our chief magistrate.

Our periodical publications, devoted to the interests of the agricultural and mechanical classes, have proved highly beneficial, and are daily enlarging the sphere of their influence. These benefits, however, may be greatly multiplied by a cheap work, adapted to the means of persons in humble circumstances, and to the economy of those who are able but unwilling to expend two or three dollars a year for an agricultural paper. It is believed there are more than 200,000 farmers in the state who read little or nothing calculated to improve their knowledge in the business by which they live. With the view of bringing this subject before the society, I have made inquiries as to the price at which a respectable publication of this character can be printed. The estimates have been predicated upon the supposition, that the editorial labors will be gratuitous,—that the subscriptions will uniformly be paid in advance,—that arrangements will be made to give it an extensive circulation, and that an edition of at least ten thousand copies will be disposed of. The result of my inquiries is, that a monthly publication, of 16 quarto pages to each number, making 192 pages in a year, can be furnished in parcels of twenty or more, at twenty-five cents per annum. The postage to any place within the state will swell the cost to the subscriber to thirty-seven and a half cents per annum. An amount so trivial, as to win indifference, and to silence the objections of avarice. I submit to you, gentlemen, whether a more efficient mode of furthering one of the objects of our association,—the diffusion of useful knowledge—can be devised, than the one here presented. Through the liberality of two public-spirited and highly respected gentlemen, a specimen sheet of the proposed publication has been published, and has been submitted for public examination. Under the auspices of this society the CULTIVATOR may be rendered a vehicle of useful knowledge, and a means of effecting great public good. I commend it to your guardian care.

In referring to *agricultural associations*, as a means of improvement, I think I shall be sustained by the opinions of those present, as well as by the authority of past experience, in the little I have to say. These associations tend to promote social and friendly intercourse, and an interchange of kind offices; to make our farmers emulous of excelling in their cattle, in their crops, their buildings, and in the neatness and order of their domestic arrangements; they bring them acquainted with each other's improvements and means of economising labor; instruct them in the comparative value of breeds of animals and the relative value of crops. They promote industry, frugality, and the love of knowledge. They tend to multiply our comforts and increase our wealth, by the laudable emulation they call into action, and to enlighten and embellish our country.

And yet I am sensible that these associations find but comparatively few ardent advocates among our farmers. Many are indifferent because they do not appreciate their benefits, or from an apathy, common to our nature, in every measure which does not promise present gain. Some will not support them lest they should lose a day or a dollar. And others oppose them from an envious wish to deprive their neighbors of that public commendation which they are conscious they do not themselves deserve, and are not likely to obtain. The man who thinks and acts only for *self*, regardless of the welfare of those around him, and who fancies that he rises because others sink, mistakes alike his interest and his duty, and is a stranger to those ennobling feelings which flow from disinterested acts of benevolence and philanthropy. If the comparison may be tolerated, I would liken the selfish man to the moon, whose sombre rays impart no vivifying influence upon terrestrial objects: and his contra to the sun, shedding abroad on every side his effulgent beams, and dispensing life, light and gladness to all around.

The remaining subject which I proposed to notice is the awarding premiums for beneficial experiments and improvements in husbandry. I confess I am not satisfied of the utility of paying for the *largest* products or the *fattest* animals, yet I believe there are many other subjects on which premiums may be awarded with public advantage. If my neighbor shall be induced, by the expectation of a premium, to make some new application of science, or some new experiment in practical husbandry, which shall prove successful, and lead to important public benefits, we become gainers, however expensive the investigation on the experiment may have been to him who obtains the premium. In this way great public improvements have accrued; and like means will produce like results. These rewards are often the exciting cause to active industry, philosophical research, and to the developement of inventive genius; which, like the seed, whose latent vitality is quickened into action by solar influence, grows, expands, and matures into fruits of usefulness. Go to the American Institute at New-York, and see the numerous productions which its premiums are eliciting from science and art. Look at Scotland, a country which is surpassed by none in recent improvements in husbandry, and where agricultural premiums have been awarded for fifty years, and see its society distributing nearly ten thousand dollars a year, as rewards for diligence and skill displayed in her rural affairs. But I need not seek for illustrations abroad. They abound in every county of our state where premiums have been awarded. Upon this subject I quote again my highly respectable correspondent, who remarks in strong language—"I have no doubt that the money which was appropriated by the state to encourage agriculture has increased the wealth of this country more than twenty per cent a year."

I have thus gone through with what I proposed to embrace in this address. I have pointed out some of the prominent defects in our husbandry, and have suggested means of remedying them at least in part. The means are partially at your command, and over them all you can exercise a salutary influence. I hope the present opportunity will not be suffered to pass without a united and successful effort to advance the objects of public usefulness for which we have associated, and for which we have met on this occasion.

DAIRY CATTLE OF AYRSHIRE.—*By Wm. Aiton.*—The March number of the Edinburgh Quarterly Journal contains an article on these cattle. They have been very greatly improved for dairy purposes. If this breed o. cattle has undergone so many favorable changes, why may not the same attention and care bestowed on our native breeds be rewarded with similar results? We believe there are but very few farmers in this country who have any fixed principles or plan in obtaining a desirable breed of cattle; and as long as this is the case, we shall never have a known and established dairy stock. We make an extract, which we recommend to every American farmer, and particularly to those who are laboring to improve our cattle by the importation of the short-horn Durham and Devon breeds.

Prior to the middle of last century, the cattle of the Bos tribe in Scotland were of two varieties,—the race of Highland cattle, that were reared for the grazier, or to be sent to the English market, and which yielded little more milk than reared their calves; and a sort of half dairy-breed, in the arable districts, which, besides feeding their calves, gave a small quantity of milk for about nine months in the year. Part of that milk was used in the farmers' families, and the overplus was made into butter and cheese. The size of these cows, and the milk they yielded, was in a great measure governed by the quality of the soil on which they were reared and fed, and the mode in which they were treated. Although the making of butter and cheese had become, at a very remote period, the chief boast of the inhabitants of the Bailiary of Cunningham, the northern division of Ayrshire, yet it was not till after the year 1760 that any attempts were made even in that celebrated dairy district to improve the breed of cows, and it was not till after 1785 that any improvement, by bettering the condition of the cattle, was understood, or begun to be reduced to practice.

Many persons yet alive can remember to have seen the dairy cows in that district of Ayrshire, poor, meagre, ill fed, ill shaped animals, few of whom that were kept by the ordinary farmers were more than from 18 to 24 stones English in weight when fat, and having all the marks of starvelings. They had long up-standing horns, deep-ringed at their roots. Their appearance was lank,—the chine of their backs bent up in a gibbous form,—their ribs had little curvature,—their skin adhered to their bones,—and their hair was hard and standing on end. They were worse than any cattle now to be seen in any of the arable districts of Scotland, and not superior in size or good shapes to the cattle now in Kintyre, Arran, or in Caithness, and few of them gave more than 3 or 4 Scots pints of milk per day. Indeed, it was impossible that they could be in better plight, as they were scarcely half fed. In summer, the pasture to which they were confined produced more weeds than rich grasses, and it was eaten so bare by the sheep that browsed on the same fields with the cows and horses, that the whole stock were merely kept alive. In winter and spring they were fed on oat-straw and what they could gather in the fields, and they got some boiled chaff and light oats after calving. So gradually and imperceptibly were improvements in the breed and condition of the cattle introduced, that although I lived in that part of Ayrshire from 1760 to 1785, and have traversed it every year since, I have difficulty in stating, from my own observation, or what I have learned from others, either the exact period at which improvements began to be made on the dairy stock of Ayrshire, or the means by which a change so important was begun to be wrought.

The dairy breed of cows in the county of Ayr, now so much and deservedly esteemed, is not, in their present form, an ancient or indigenous race, but a breed begun to be formed during the memory of living individuals, by some of the inhabitants of the Bailiary of Cunningham, and which have been gradually improving for more than fifty years past, till now that they are brought to a degree of perfection that has never been surpassed as dairy stock in any part of Britain, or probably in the world. They have increased to double their former size, and they yield about four, and some of them five, times the quantity of milk they did formerly. By greater attention to their breeding and feeding, they have been changed from an ill-shaped, puny, mongrel race of cattle, to a fixed and specific breed, of excellent shape, quality, and color. This change has not been effected by merely expelling one breed and introducing another, but on the far sounder principles of careful crossing and better feeding.

About the year 1760, or soon after that period, some of the noblemen and great landed proprietors of that county brought to their seats in Ayrshire a few cows of greater size and better shapes than any of the native stock existing at that period; and these cows, when fed on the rich and sheltered lawns of their new owners, certainly were more productive than the native breed. They were mostly of a dark red color, with patches of white, and were then said to be Dutch or English cows. I remember to have seen one or two of these stranger cows at Loudon Castle, Eglinton Castle, and one sent to Grougar by Mr. J. Orr, about the year 1768; and I understand that some stranger cows, of improved size and qualities, were about that time brought to Dunlop House. And the Earl of Marchmont having procured from the Bishop of Durham a few cows and a bull of the Teeswater or some other English breed, of a red color, with irregular patches of white, and kept them some time at his seat in the county of Berwick, Bruce Campbell, then his lordship's factor on the estate of Cessnock in Ayrshire, brought two or more cows and a bull of that breed there, and their progeny spread over part of the country. The bull was afterwards purchased by Mr. John Hamilton of Sundrum, near Ayr, and became the sire of several calves on that estate.

These are all the instances of stranger cattle which had been, about that period, brought into the county of Ayr, so far as I knew at the time, or have been since able to trace, on minute and anxious inquiries I have repeatedly made on the subject; and as I am not aware that more than a dozen, or at most twenty such cows, ever came into the district, I am disposed to believe, that although they rendered the red color with white patches fashionable in Ayrshire, they could not have had much effect in changing the breed into their present highly improved condition. While these large cattle were allowed to browse on the lawns near a nobleman's or gentleman's seat, they throve and yielded good returns. But when they or their offspring were turned to the bare pasture, then prevalent on farms, they soon became of less value than the indigenous stock. When bulls of larger size than the native cows were coupled with them, the offspring had large bones and bad shapes and qualities, unless they had been reared and fed on superior pasture, and fodder suited to their size. Coupling large males with inferior jaded cows, in hopes of improving the breed, is one of the greatest errors that can be committed by a breeder of any species of cattle. It was owing to this ill-judged practice that the dairy breed of Ayrshire acquired too much bone for their size, and for the inferior manner in which they were fed; and from the practice of keeping bulls of a large size, the bones of the dairy breed are still too prominent. But this evil will probably soon be removed by improved modes of feeding.

It is certainly best to breed from bulls of good shapes, and of a size suited to the cows to which they are put, otherwise their offspring will have large coarse bones, and never will be strong and spirited in proportion to their size. They will be, in fact, ill-shaped, dull, unhealthy mongrels. The most skilful breeders of dairy stock in Ayrshire prefer bulls that have least of a masculine shape, and which have the greatest resemblance to a cow.

The shapes that are most approved of in the Ayrshire dairy stock are: Head, small, but rather long and narrow at the muzzles; the eye, small, but quick and lively; the horns, small, clear, bended, and their roots at a considerable distance from each other; neck, long and slender, tapering towards the head, with little loose skin hanging below; shoulders, thin; fore-quarters, light and thin; hind-quarters, large and capacious; back, straight, broad behind, and the joints of the chine rather loose and open; carcass, deep; pelvis, capacious and wide over the hips, with fleshy buttocks; tail, long and small; legs, small and short, with firm joints; udder, large, broad, and square, stretching forward, and neither fleshy, long hung, nor loose, with large and prominent milk-veins; teats, short, pointing outwards, and at a considerable distance from each other; the skin, thin and loose; hair, soft and woolly; the head, horns, and parts of least value, small, and the general figure compact and well proportioned. It is not to be understood that every dairy cow, or that any one of them, has all these fine shapes. But these are given merely as the perfection of the breed, or the shapes most desired and sought after.

The real dairy breed of cows has extended from the Bailiary of Cunningham, first over that of Kyle, the centre division of Ayrshire, the whole county of Renfrew, and the western parishes of the county of Lanark, and are fast extending to many other counties both in Scotland and England. But the dairy cows in the centre of Clydesdale, from Hamilton to Lanark, though of the same color and general aspect, and remarkably handsome, differ a little in their shapes from the Ayrshire dairy cows. Those in Clydesdale are longer in the body in proportion to their size, rounder in the chest, less capacious over the pelvis, and heavier in their fore-quarters, than the improved dairy breed of Ayrshire. The Clydesdale breed is better suited for the grazier and

butcher, than the real Cunningham breed; but, if the opinions of the Ayrshire farmers are correct as to the proper shapes of milch-cows, as I believe they are, those in Clydesdale, though beautiful animals, are not of the genuine dairy breed.

The late Lord Belhaven kept at Wishaw-House, for several years, a fine bull of the dairy breed, a native of the parish of Beith in Ayrshire, but which, though a beautiful animal, was longer and rounder in the body than the generality of the cattle in that parish, and too strong and heavy in the fore-quarters for a dairy bull. But, as that bull got many prizes at the cattle shows in Hamilton, he not only raised a numerous progeny on the banks of the Clyde, but the farmers, believing this bull to be a model of perfection, preferred cattle of his shapes, more than those that are sought after in the county of Ayr.

The *chief qualities* of a dairy cow are, that she gives a copious draught of milk; that she fattens readily; and turns well out in the shambles. In all these respects combined, the Ayrshire breed excel all others in Scotland, and are probably superior to any in Britain. They certainly yield more milk than other breeds in Europe,—no other breed fatten faster,—and none cut up better in the shambles*,—and the fat is more mixed with the lean flesh, or marbled, as the butchers say, than that of any other breed in Britain. They always turn out better than the most skilful grazier or butcher, who are strangers to the breed, could expect on handling them. They are tame, quiet, and feed at ease, without roaming, breaking over fences, or goring each other. They are hardy, and can travel at the rate of from twelve to fifteen miles a day; and they are not injured, but rather improved, by lying out all night during summer and harvest. From their peaceable habits, and the desire they always show to eat, some have imagined that they are dull and grovelling animals, but they are as lively and spirited as could be wished; and they are seldom affected with disease.

The *size* and *weight* of the dairy cows varies according to circumstances, from about 20 to near 60 stones English when fat, sinking offals. The greatest number of them weigh from 24 to 36 stones. Their prices varying according to circumstances, it is not easy to fix an average. They have been sold from £8 or £9, to £20 and £25, and as high as £30 and £35. Probably from £10 to £15 may be considered as the average price at present of the best cows; for, like every other species of farm stock and produce, they have sunk in price for some years back.

These cattle are *reared* in a plain, easy, and simple way. The calves are selected from parents of the best shapes and qualities, and few are reared that are not of the fashionable color, a dark red with patches of white. A good calf may be reared at any season of the year; but those dropped in March or April come at the most convenient time, as they are ready to be put to grass in May, and attain some size before they are turned on fodder.

Calves reared for dairy stock are never allowed to suckle their dams, but are always fed by the hand from a dish. They generally get from four to five quarts of new milk twice every day, till they are five or six weeks old; when some whey and meal are introduced into their milk, and the milk gradually withdrawn, and finally withheld, when they are from seven to eight weeks old. When reared in winter, the milk has to be continued longer, as a calf cannot eat dry fodder so soon as it can eat new grass. Hay tea, the infusions of pease straw, linseed beaten into powder, treacle, &c., have been sometimes tried in feeding calves, but none of these expedients have ever come into general use in rearing stock in Ayrshire. But care is always taken to introduce every change of food to young cattle as gradually as possible, as all sudden changes are hurtful.

Dairy calves get the best pasture on the farm for the first summer, and have some preference to the other cattle during the first winter. But, from that time till they come in milk, they are generally kept on inferior pasture. They are mostly kept in the cow-house during the night in winter. But the better they are fed and treated when young, the sooner will they have calves, and the more likely are they to turn out good milkers. For, whatever may be said about improving the breed, by introducing better bulls, or by the most skilful crossing, it will always be found that it is chiefly, or almost exclusively, by bettering the condition of the cattle, that the most effectual improvement in the stock can be effected. It was not by the charms wrought by the introduction of a dozen or two stranger cows, and a bull or two from England, or from any other country, that the whole race of cattle in three counties have been changed from the worst in the arable districts of Scotland, to the best in Britain. That extraordinary change has been effected in one lifetime, chiefly, or rather almost entirely, by bettering the condition of the cattle—by better feeding and treatment, aided by judicious crossing, chiefly from the same race of animals. Better feeding and management, with reasonable attention to breeding, will raise any race of cows, from the worst to among the best; while crossing ever so much with strange blood, or even a complete change of the stock, will do no good, unless they are well fed when young, and when grown up—when giving milk, or when dry. This has been proved to a demonstration, in the improvement of the Ayrshire breed; and the same thing will happen wherever the condition of the stock is uniformly improved by better feeding and treatment.

The milk-cows in the dairy district browse in summer on such pasture as the farm affords; and in winter they live on oat-straw, of coarse meadow-hay, with what they can gather in the fields when the weather is temperate; and, by way of luxury, they have chaff or cut hay, boiled with light oats, green kale, potatoes, turnips, with some good hay daily after they calve, and till they can be put to grass. But, from the time they are put on fodder, till they drop their calves, they seldom get any thing but dry fodder, with what they can gather in the fields. It has been found that too much boiled meat does not suit cows in calf; but, surely, a few turnips daily, either boiled with chaff, and given without much moisture, or raw, would not injure them in any condition they can be. On the contrary, a small mess of turnips daily, either entire or boiled, would keep the cows in a milky condition through the winter, and prepare them for giving more copious draughts of milk when they calve, than when they have been fed on dry fodder only the whole winter and spring. Many dairy farmers provide as many turnips as enable them to give every cow a few daily all the time they are on fodder; and a few potatoes when the turnips fail.

Besides these meases, or along with them, the dairy cows have long been helped to a quantity of oats after calving. No farmer can exactly state the quantity of grain so given to every cow in a season, as some give far more than others. It was found, however, that some of the oats passed through the intestines of the cows entire; and they are now bruised in a mill. Of late, the grain chiefly given to milch cows is bean meal, mixed with boiled chaff and turnips. The quantity so given is generally about a boll of beans made into meal, and divided to each cow in the course of the winter and spring. Some persons give a greater quantity, particularly to cows kept in towns, where they are fed for beef as well as milk.

Wherever the land is enclosed, the cows are turned out to the fields, where they continue in the night time, from Whitsunday till the weather becomes stormy after harvest. Some people who have not fences, and who are too indolent to make them, argue that the cattle are safer from injury in the house at night,—that a sudden change of weather may hurt the cows, or they may break from their encampments and injure the crops,—while they can be supplied in their stalls with provender. On the other hand, when cattle can be kept out day and night, the expense of a herd is saved; they are under no restraint, and are generally more hardy and healthy than when kept in the house in the night time, and the dung is not altogether lost.

Soiling or feeding cows in the house on cut grass in summer, as is generally done in France and Belgium, and in some places in England, is not much practised in the dairy district of Scotland. The land occupied with dairy stock is not so rich as to admit of that mode of feeding to any extent. In many places the horses are fed on cut grass in summer; and the second cutting of clover is always carried to the stables and cow-houses.

Farm-stock have long suffered for want of a supply of salt. The high duty on that necessary of the life of mankind and animals long operated as a prohibition to its use among cattle; but even now, when it is removed, many farmers do not avail themselves of the relief. They do not consider that all the domesticated animals have as strong a desire for salt as they themselves feel; and that it acts as a condiment to animals, as well as to the human race. Salt promotes digestion, and improves the pile of horses and cows. The superior quality of the wool of Spanish sheep proceeds chiefly from their being daily supplied with salt. Wild animals run many miles to get a tasting of the salt-springs, when they are within reach; and it is in their neighborhood that they are the most successfully waylaid and killed. It is not only bad management to deprive cattle of salt, which does them so much good, but it is even cruel to refuse them what they so much desire.

Of the *quantity of milk* yielded by the cows of the Scottish dairy breed it is not easy to speak with precision. There is a great diversity in the milk of cows, which is increased by many circumstances—as the age of the cow—the condition she is in—the nearness to

* We should doubt of the Ayrshires fattening faster, and cutting up better, than the Short-horns.—Ed.

or distance from her calving—and, above all, from the matter in which she is fed. It frequently happens, that of cows not only of the same breed, but even those which are the offspring of the same parents, fed on the same farm, and in the same manner, the one will yield more milk than the others. Too young or too old cows give less milk than those of middle age. A lean cow never gives so much milk as one in good condition. Cows generally give more milk for a few weeks after they have calved than they do at any other time. The food with which they are fed has a powerful influence on the milking properties of all cows; and the mode in which they are reared has a considerable effect on their milking property. A cow reared on bad pasture and scanty subsistence, will never turn out so good a milker as one reared on better pasture. From these and other circumstances, it is not easy to determine the average quantity of milk given by the dairy cows.

In my Survey of the county of Ayr, I stated that some of the dairy cows of that county yielded, for a long time after calving, from 39 to 42 imperial pints of milk per day, but that such returns were not very common. Many of them, however, yield about 30 pints daily when in their best plight, but they gradually fall off as the season advances; and many of them do not yield much more than half that quantity. Probably 3600 pints may nearly be the average quantity of milk cows in that district give in the course of one year.

This statement having been contradicted by a person who resided near the sources of the Clyde, where dairy cows and dairy husbandry are but little known, I was at pains to consult the dairy farmers of Ayrshire anew, when employed by the Board of Agriculture to draw up the chapter on Live Stock, for the General Report on Scottish Husbandry; and I found that, so far from overrating, I had underrated the returns of these cows. I mentioned in that chapter, that the farmers in Ayrshire had convinced me, and that it could be proved, that 48, 54, and in some instances 60, pints had been frequently drawn from these cows daily, for several weeks, when they were in their best plight.

These I mentioned as extraordinary returns. But I added, that if the fact was considered, that several farmers let out the milk of all their cows for a year to people who performed all the labor about the cattle, and in manufacturing the milk into butter and cheese, taking the risk of the market, and paying at the rate of from £10 to £15, and in some instances more, for each cow's milk per annum, the quantity of milk must have been equal to what I had represented. I therefore concluded, that the average returns of the better sort of the dairy cows, when properly fed and in good plight, would amount to 6000 imperial pints of milk every year; but that inferior cows would not give nearly so much.

Such were the conclusions I came to after consulting the farmers a second time, and to that I still rigidly adhere, against all opposition, from whatever quarter it may proceed.

The Locusts.—It appears that the seventeen-year Locusts (*Vicadæ septemdecim*) are to pay their periodical visit this year. It has been ascertained that the insect appears, periodically, once in seventeen years, and in the spring of the year. They were observed in this country at the stated intervals from 1749 to 1817. Apprehensions are expressed that they will commit great ravages, and it is asserted that more than once, when they visited some parts of New England, they not only ate up all the grass in the fields, but actually attacked *clothing* and *fences* to appease their insatiable hunger. But the Encyclopædia Americana informs us that they are in no way injurious to vegetation, except from the damage done by the female in depositing her eggs—while the insect is itself the favorite food of various animals, and in this way may be turned to good account. Hogs devour them eagerly, and some of the larger birds are fond of them. The Indians consider them a delicate food when fried. In New-Jersey they have been converted into *soap*.

In various parts of the world, from time immemorial, these insects have been used as food for human beings. For this purpose, in some countries, they are caught in nets, and when a sufficient number is procured, they are roasted over a slow fire, in an earthen vessel, till the wings and legs drop from them; when thus prepared they are said to taste like craw-fish. The locust constituted a common food among the Jews, and Moses (Levit. xi. v. 22) has specified the different kinds which they were permitted to eat.

It has been disputed, however, whether the food of John the Baptist, in the wilderness, was the insect locust, or a fruit of the same name.

Improving Seeds.—I heard him tell Col. Williams that day that he was born on a farm, and lived on one all his life, and that he was then, I think he said, near 80 years of age. I knew him about twenty years before his death, and knew him to be a skilful farmer, and a very industrious man. In his long life he tried a great many experiments in farming and gardening with success. He advanced some new ideas respecting seeds, &c. [See Dr. Darwin's Phothologia, Dublin edition, printed in the year 1800, page 410.]

"He believed that no kind of incest would degenerate the breeds of vegetables," &c. And further, "Mr. Cooper was led to his present practice, which he begun more than forty years ago, by observing that vegetables of all kinds were very subject to change with respect to the time of their coming to maturity, and other properties, but that the best seeds *never failed* to produce the best plants. Among a great number of experiments he particularly mentions the following:

"About the year 1746, his father procured seeds of the long watery squash, and though they have been used on the farm ever since that time without any change, they are at this time better than they were at first."

"His early peas he procured from London in the year 1756, and though they have been planted on the same place every season, they have been so far from degenerating, that they are preferable to what they were then. The seeds of asparagus he had from New-York, in 1752, and though they have been planted in the same manner, the plants are greatly improved."

P. S.—Joseph Cooper: As some persons may be sceptical, with respect to his seeds not only continuing their good qualities, but increasing in goodness, I will here relate what I saw him practice. He generally sowed every spring from about five to six acres of early peas, and in gathering his peas for sale, he always reserved a number of rows for seed, and he would not permit any one to touch these rows, and he made it a point to gather those first ripe on those rows for his seed peas. The consequence was, that he generally had the earliest peas in the market of Philadelphia, and mostly got for the first gathered a dollar and a half for a peck, and by the time they came down to two dollars a bushel, his were always disposed of. He never sowed more than one kind. —[Genesee Farmer.]

Strawberries—Garden of the Caledonian Horticultural Society.—The Editor of the N. Y. Farmer has received from Mr. J. Burnet, head gardener of the experimental garden of the Caledonia Horticultural Society, a few seeds of the following Strawberries: Downton, Keen's Seedling, Bishop's Orange, Grove-end Scarlet, Black fruited Roseberry, Keen's Seedling Imperial, Prolific Hautbois. Any subscriber to the Farmer may have a paper by sending to the seed-store, 81 Barclay street.

From two circulars, in reference to the experimental garden, we make the following extracts:

Edinburgh, Feb. 4, 1834.

The Council of the Caledonian Horticultural Society, feeling the propriety of calling the public attention to the present state of the Establishment under its charge, have instructed the subscribing Committee to submit this statement to the Members of the Society and Shareholders in the Garden, and to any individuals of rank and influence who may be induced to take an interest in an institution of so much practical advantage to the country.

The Society was instituted in 1809, and for a number of years endeavored (not without success) to promote the improvement of Horticulture, by offering numerous Premiums, and by publishing its Transactions. Its funds depended on the annual payment of one guinea by each member; and the operations of the Society were necessarily more limited than was desirable. In short, the establishing of an experimental garden was found to be absolutely requisite, more effectually to enable the Society to advance the science of Horticulture, particularly by collecting together, with accuracy, all the best varieties of hardy fruits, including the new French, Flemish, and German Pears (several of which have already fruited, and proved excellent), and by exhibiting practical examples of the improvements in forcing, &c. which were in progress in other quarters. A number of gentlemen paid twenty guineas each for transferable shares in this experimental garden, thus contributing nearly £3000 towards its formation; and the Society added above £1000 (besides engaging to pay a large sum annually towards its future support). In 1824, an arrangement was entered into with the Honorable the Barons of the Exchequer, by which a piece of ground of the extent of eight Scotch acres, conveniently situate for the purpose, was obtained. Besides the annual payment to the Society, there is one guinea also levied for the support of the experimental garden. The annual payment to the Society may be compounded for, by paying £10 10*s.* at once; and any member of the Society becoming a

shareholder (the price of a share, which is transferable, being £21 to members, and £25 to those not members,) is, of course, relieved from the annual payment to the garden.

Since that period the garden has been inclosed on the north with a wall fourteen feet high, exhibiting specimens of the various kinds of fruit-wall, brick and stone, coped and uncoped, recommended by the best writers on gardening; and it has been stocked with a most extensive, it may be said, indeed, almost complete, collection of fruits and vegetables, with a copious arboretum—besides a large assortment of shrubs and flowers, either remarkable for their beauty or their rarity and recent introduction. A hot-house, a vinery, and peach-house, have been erected, and also a commodious gardener's house, containing rooms for the meetings of the council and committees, in which the library and botanical collections of the Society are deposited; while no fewer than seventeen parts or numbers of the Society's Transactions have been published.

The benefit to the public from these operations, the council can confidently state, has been as great as could have been expected from any establishment of this description. All the new varieties of fruits and vegetables worthy of cultivation have been introduced into the Society's garden, and every facility has been afforded for their dissemination through the country. The advantages to the members and shareholders have likewise been very great, as, besides the privilege of walking in and admitting their friends to the garden, where every article is correctly tallied or named (so that the garden forms an admirable school of horticulture, botanical as well as practical), they have the right of obtaining gratuitously a portion of whatever it contains, viz. young trees or grafts of the fruits, plants, seeds, &c. of which large quantities are always prepared for this purpose; and, it may be added, that during the last three years, many thousand applications for such have been complied with.

It should be observed that the advantages accruing to members and shareholders are now great. Between £4000 and £5000 have been expended in the formation of the experimental garden; and in its stock of fruit-trees, &c. it is richer beyond comparison than any collection ever attempted in this country. The Society is now incorporated by Royal Charter, and this, with the government allowance of £200 a year, gives it the highly desirable character of stability and freedom from risk, so important in an establishment of this nature.

Orchards.—The collection of fruits has been very much increased by donations of new or rare varieties, from the Horticultural Society of London, and from various public and private establishments in this country. Owing to these accessions, the Orchard Ground is planted more closely than was intended; but the trees will be gradually thinned out as their merits become known.

Arboretum.—The collection of *trees* and *shrubs* is now extensive, and it continues to be augmented, chiefly by donations from most of the principal nurseries in Scotland and England.

At the south west corner of the garden a bank of soil, faced with bricks, has been constructed, so as to form an inclined wall at an angle of 50°. Various kinds of fruit trees have been planted and are trained to this wall, to ascertain whether the inclined may not be warmer and earlier than the usual perpendicular wall. This experiment has been instituted at the desire, and at the expense, of John A. Murray, Esq. M. P.

In the *Culinarium*, a comparative trial has been made, both in the year 1832 and 1833, of planting whole potatoes in very wide rows, instead of cut sets planted at the usual distance. Although the former plan has been recommended on high authority, the result has here proved rather unfavorable to it, especially when late potatoes were employed. Of these the whole potatoes, wide planted, yielded at the rate of ten bolls per acre less than cut sets of the same kind, planted at the usual distance. When early potatoes were used, the produce from whole tubers in wide rows was more satisfactory. Mr. T. A. Knight having obligingly communicated some tubers of several of his best seedling potatoes, these were last year cultivated, and have proved excellent, as will be more fully reported on a future occasion.

Arranging the Colors of Florists' Flowers.—With regard to the difficulty of disposing of whites, blacks, and browns, in the arrangement of flowers, it may be adopted, as a rule sufficient for most practical purposes, that whites look well beside every other color, even blacks and browns; that blacks look best next to greens, reds, and whites; and that the same will hold good as to browns. In arranging hyacinths in a bed, or chrysanthemums on a stage, all the varieties having the same color for a ground should be placed together; for example, all the reds: but, to prevent the monotony that would result from salmon running into crimson, and crimson into lilac, there may be introduced between them streaks of white, and sometimes of black or brown, to keep up the harmony. It must be recollected that, in arranging flowers according to their colors, something of botanical arrangement must also be kept in view. That is, all those varieties which approach the nearest to each other must be placed the closest together. This may frequently be done, and harmony preserved, without the introduction of either whites or blacks; but, where it cannot, whites or blacks will afford the desired contrast. It is difficult, if not impossible, to give detailed directions on this subject without the aid of colored plates; and, even in that case, much must be left to the taste and feeling of the operator. We would recommend our correspondent to store his mind with ideas on the subject from the works of Burnet, and of Philips, on Painting; or, if these works be too bulky for his purpose, we would recommend a small work, by a scientific house-painter, Mr. Hay of Edinburgh, entitled *The Laws of Harmonious Coloring, &c., by D. R. Hay.* If our correspondent possesses our *Encyclopædia of Cottage, Farm, and Villa Architecture*, or even Part xii. of that work, he will there find (§2013.) how highly we think of Mr. Hay's Essay; and he will be able to conceive in what way it will be useful to him in the arrangements of his flowers.—[Loudon's Magazine.]

Packing Peaches, Grapes, and Strawberries, to send to a Distance.—For peaches my plan is this: I procure a box of a size proportionate to the quantity of fruit that I wish to send, some tow, and some silver paper. I cut the paper into small squares, and place one square smoothly round each peach; after this, I put a small quanty of tow carefully and evenly around the paper. Into the bottom of the box I put a thin layer of dried moss, on which I put the fruit as closely together as possible, and in the following manner: I pack two layers without any thing more between them than the paper and tow which surround them; I then carefully support a thin board by three nails from the outside, so that the board may not press too much on the fruit below; this board forms a second floor, on which I pack two layers more; and so on. If melons are required, they may be closely packed in the lower chamber, or in the top part, if any vacant space remain; but care should be taken to fill up any vacancy well with tow.

Grapes I pack as follows: Into the bottom of a box I put a shallow layer of clean bran; I then place in closely a layer of bunches of grapes that are perfectly dry, and from which all the decayed berries have been carefully removed; I then strew in as much bran as will cover them, and so on till the box is filled; taking care to shake the box gently as I proceed, that the bran may fill up every crevice, and prevent the bunches from being displaced during their journey. The person who unpacks the fruit may easily clean away the bran, by blowing smartly through the bunches with a small pair of bellows.

For packing strawberries, I provide a quantity of small upright wicker baskets, made to hold from a pint to a quart each; I fill them by putting the fruit in very closely together as I gather it; I then tie the baskets down carefully, and closely pack them in an upright position in a large flat basket made for the purpose. Strawberries, thus packed, will be quite fit to go to the table after one day's journey; and it is advisable never to attempt to send this fruit to a distance which will require it to be two days on the road.

I have practised the above mode for several years, and I shall continue to adhere to them until I am fully convinced that I can adopt better ones. I am, sir, yours, &c. Thomas Wilson, Gardener to the Rt. Hon. the Earl De la Warr. Buckhurst Park, Sussex, Dec. 21, 1833.

Forced Asparagus.—Forced asparagus is now becoming general, and of good quality: a fine specimen of it has been seen, imported from France, evidently under a different system of culture, as it closely resembles the new variety of Grayson's in its natural state. We have yet to acquire the knowledge how it is to be obtained here. On referring to the *Jardinier* for 1834, I find the plan described there, and it would, I think, be well worth inserting in your Magazine.—[Loudon's Gardener's Magazine.]

Sheep killed by Cats.—Incredible as this may sound, we have good authority for saying the deed has actually been perpetrated in this county. Several cats of the common species, with their progeny, have for three or four years past made an old stone quarry, in Martic township, their abiding place, and in that time, it would seem, have relapsed to the wild state, and acquired the ferocious and predatory habits natural to their tribe. A short time ago some of them were seen in pursuit of a full grown sheep, belonging to the flock of Mr. Martin Herr, of that vicinity. They soon overtook it, dragged it to the ground, and before the person who witnessed the scene could reach the spot, they succeeded in so lacerating the poor animal's throat, that it bled to death in a short time. It required considerable exertion to drive them off. A dog, subsequently sent in pursuit of them, caught one, but would probably have been himself worsted in the conflict that ensued, had not the owner come to his rescue. It is said that they also pursued a small boy some time ago, and followed him a considerable distance, as is now supposed with deadly intent.—[Lancaster Examiner.]

SURFACE MANURING.—*Mr. Fleet:* The remarks, folio 63 of the Farmer, on surface manuring, are so very fanciful, and the idea of chemical affinity between manure and the earth too great to be overcome by fermentation, is so new to me, that I cannot avoid making some comment on it. That manure spread plentifully on grass land will be beneficial, there can be no doubt; but the same manure if ploughed under would obviously do ten times the good. The idea of chemical affinity too great to be overcome by fermentation is so exquisitely absurd, that it needs no comment. By fermentation, manure is resolved into carbonic acid gas, which, if exposed to winds, will certainly be carried away, but if buried in the earth it is out of reach of winds, and is yielded as the crop needs it, and can assimilate; the carbonic gas is acidified by the oxygen of the atmosphere, and thus forms carbonic acid gas, the food of plants; until it is so prepared, it cannot enter the capillary vessels of the plants. Yours,

RATIO.

February 25, 1834.

REMARKS.—Both general practice and theory are in favor of Ratio; still we think the practice of the "Old Man" who was "successful as a farmer," should not be regarded as founded on mere fancy. The plan of improving lands by the application of fermented manures on the surface, may not be so unphilosophical as Ratio would seem to indicate.

ORCHARDS IN CLYDESDALE.—From an article in the Edinburgh Quarterly Journal of Agriculture we make a few extracts:

The orchardists in Lanarkshire have relinquished the practice of placing flags under the fruit-trees; and they neither make pits, nor trench the ground eighteen inches deep, or more than ordinary delving with spades. They plant the trees only from six to eight inches deep, and raise the earth of a foot or eighteen inches round them, a few inches above their roots, to enable them to withstand the blast.

Young fruit-trees require ropes of straw, or sprigs of broom, to be tied round them, to prevent their bark being eaten by hares. Either of these means are preferable to besmearing the trees with soot, or any other nasty substance.

The *produce* of the Clydesdale orchards, consisting of apples, pears, plums, and small fruit, has hitherto been disposed as fruit for family use, or sold to retail dealers in Glasgow, Paisley, Hamilton, Lanark, &c.; and part of it has often been disposed of in Edinburgh. But now that the prices of apples and pears have fallen to less than one-third part of what they brought about twenty years ago, and from the great expense of carting fruit to market, the orchardist would do well to consider if it could not be manufactured into cider and perry. It is well known that apples raised from a clay soil make the best cider; and from the best information I have been able to procure, from twenty-four to thirty bushels of apples yield a hogshead, or 110 gallons, of cider, the price of which varies from £1 5s. to £2 2s. per hogshead. In Herefordshire, twenty hogsheads of cider have often been made from the apples grown upon an English acre of land, although no more than forty trees grow on an acre. If a part of the fruit in Lanarkshire were converted into cider and perry, when the crops are most abundant, and only the marketable part of the crop, or what is known in Glasgow by the name of "shop fruit," were sold, a considerable sum might be raised by these beverages, while the value of the marketable fruit might be kept at a remunerating price. Should the return from cider and perry fall short of the price the fruit brought some time ago in the Glasgow market, the expense of the carriage of the fruit at all events would be saved. I understand that the whole apparatus and utensils for making cider may be fitted up for about £50, and that two or three of these establishments would be sufficient to bruise one-half of the fruit that these orchards produce annually.

From the vast quantity of gooseberries and currants now raised in the Clydesdale orchards, and in every garden in that country, their prices have fallen to about one-half, or two-third parts of what they brought some years ago. But as immense quantities of them are now made into jam, jelly, and wine, as well as into tarts and other confectionary articles, condiments so wholesome and palatable cannot fail to be in high request among all ranks of people. These fruit, in fact, occupy the same place in Scotland that the vines do in warmer countries. Apples and pears are eaten in France and Belgium as food along with bread of rye; and in Cornwall and some parts of England the laboring people eat fruit instead of bread or potatoes, and prefer the fruit to either of them.

Under-crops of potatoes, oats, beans, barley, &c., are raised to a considerable extent among the fruit-trees in the Lanarkshire orchards, though not in that regular order as to be traced to any specific rotation of cropping.

The fruit in the orchards at Camnethan Priory, the property of Robert Lockhart, Esq., and which extend to 24 acres, the trees mostly full grown, and in good order, was sold a few years ago at upwards of £900; but it was sold another year as low as £30. In general, it fetches from £400 to £600 per annum, besides a considerable portion of the best fruit being retained every year for family use.

The orchards at Dalziel House extend now to 18 acres, with 5 acres more recently planted The fruit on about 12 acres of it was sold one year at £617, and the lowest sum that part ever gave was £100. The small fruit gives from £17 to £36 per annum, besides the value of the valuable under-crops.

But a more fatal and common disease in the Clydesdale orchards proceeds from the atmosphere, at the critical period of the blossoms expanding, or the fruit setting. A few days of dry withering easterly wind or a damp easterly *haar*, or a few flashes of electricity, at the time the trees are in flower, or when the fruit is just beginning to set, often blast the finest prospects of the orchardist. Cold rains sometimes benumb or wash away the pollen; strong winds blow it off, and sudden changes from heat to cold vitiates the fecundating matter, the farina withers in the anthers, and impregnation is prevented. Caterpillars and grubs, of the various species of phalæna, papilio, and musca tribes of vermin, fix themselves on the buds or leaves of the trees, and destroy not only the fruit, but, like their devouring brethren of Egypt, eat up every "green thing," and render the trees, for a season at least, barren of fruit.

[The honorary Silver Medal having been offered as a premium for the best account of experiments made, to ascertain what advantage may be derived from plucking off the flowers of the Potato, it was adjudged to the author of the following Report.]

Report of an Experiment made at Aberdona, to ascertain the Benefit resulting from the Removal of Potato-Blossoms. BY JAMES MURRAY.

The experiment was made according to the plan laid down by the Highland Society in their list of premiums for 1833.

The quality of the soil was not the best adapted for a very successful potato crop, but as I did not think of making the experiment until after the ground had been sown, I had no alternative left me. At the same time, I believe that an experiment of this nature, although made upon a crop raised in soil not peculiarly well adapted for its culture, will be quite as satisfactory in determining the advantages or disadvantages of it, as one made upon a more congenial soil. The soil consisted throughout the two acres upon which the potatoes had been sown, of a shallow loam, upon a bed of what is generally called till. The field had been well drained, but like every other field of the same nature of soil, (unless where Mr. Smith of Deanston's trenching plough may have been used,) continues in what may be called a cold, damp state, and therefore an enemy to the potato.

The variety of the potato sown was one which had been brought from Ireland some years ago by a gentleman of this neighborhood, and is called the red potato in this neighborhood.

I divided the whole field into parts of *three* drills each, and having explained what I wished to be done to a few children of from nine to twelve years old, previous to the appearance of any blossoms, they never allowed a day to elapse, without looking after their charge, and no sooner had a blossom begun to appear, (or in bud,) upon No. 1 of each part, than it was certain to be immediately plucked off. The other two drills of each part remained untouched until the blossoms upon No. 2 seemed to be fully expanded, when they were also plucked off, while No. 3 was allowed to ripen its fruit. By arranging the drills in this manner, I could depend on being more correct in having the soil of each of the drills of each part exactly similar than I could have been, had I divided the field in the manner proposed by the Society.

The preceding part of the experiment was (as it must appear to be) very simple indeed, and attended with no expense whatever, for there are always children in the neighborhood of a farm, who will do the work for a few pence a-day.

The most difficult part of the experiment to arrange was the taking up of the crop, so that there might be no interference between the different drills. To obtain this, I took three carts, one of which was appropriated entirely by No. 1 of each part, another by No. 2, and the remaining one by No. 3. In this manner I prevented the very slightest mingling of the potatoes.

The quantity of potatoes which each cart held, was exactly ascertained, and the management of this part of the experiment being given to one person, it was his business to mark down how many loads each cart took to the potato-pit.

After the whole crop had been taken off the field, and the overseer's note-book examined, the following was the result:

Drills, No. 1, being those from which the blossoms were plucked in the bud, contained 30 bolls 2 bushels.

Drills, No. 2, being those from which the blossoms were plucked when in full flower, contained 27 bolls 3 bushels.

Drills, No. 3, being those upon which the fruit was allowed to ripen, contained 26 bolls.

The superiority, therefore, of No. 1 over No. 2, was 2 bolls 5 bushels; over No. 3, was 4 bolls 3 bushels; and of No. 2 over No. 3, was 1 boll 2 bushels.

From the above experiment it would appear, that the potato crop had been improved by having the blossoms plucked off, and that according to the period at which it had been done, At the same time, the difference is perhaps not much more than would be counter-balanced by the additional trouble given in taking up the crops; for, although regulated as well as possibly could be done, still it could not be taken up in nearly the time in which it would have been done, had the drills been resorted to indiscriminately.

The quality of the potato is remarkably good, it is of a mealy nature, and an uncommonly good keeper. We were using them last year here, in preference to early potatoes. Aberdona, Alloa, November, 1833.—[Transactions of the Highland Society of Scotland.]

Report of the joint committee of the Senate and Assembly of the State of New-York, on the memorials from several counties in this State, relative to the subject of an Agricultural School or Schools, made March 15, 1834.

[It is with no ordinary pleasure that we lay this Report before our readers. The statements, however, against the utility of agricultural societies, are not founded on facts, and are wholly and positively disproved by past and present experience of enlightened and observing agriculturists in both this country and in Great Britain.—Ed.]

Mr. Herttell, from the joint committee of the Senate and Assembly, to which was referred the memorials from several counties in this State, on the subject of an agricultural school, or schools,

Reported, That they have had this subject under their serious consideration, and have canvassed all the plans for the promotion of the science of agriculture, which have been presented by the petitioners, or suggested by practical agriculturists.

It appears to the committee that there are only two propositions which it would be necessary to present to the Legislature. One is an annual appropriation of a sum of money to be distributed among the agricultural societies in the several counties of this State, where the county society is or may be organized, to be distributed as premiums in such manner as the societies may direct, and proceeding very much in the plan as heretofore pursued by agricultural societies; and its details will be found in the report of a committee of the Assembly, in Assembly Documents, vol. 4, No. 312, for 1833.

The objections to this appropriation of the public moneys are many, and deserving much attention. Among others, it has been said with much force, that they contributed only in a small degree in diffusing the science among the great body of the people, and that the premiums were invariably awarded to persons of considerable property, who were enabled by the use of manure on a limited piece of ground to force an extraordinary vegetation, and that they were not essentially beneficial to the great body of the farmers, confined as they were to local cultivation, and unconnected with scientific experiments on an enlarged scale.

The gradual decay of those societies in almost all the counties of the State would seem to show, that for this and other good causes, the benefits derived were not equal to the expense and trouble of supporting them. The committee however do not, in this respect, intend to disparage such societies, by voluntary associations in the counties, nor to interfere with their operations, being satisfied that much good has been done among the richer portion of farmers entering into competition with each other. What is required by the farmers is a school of instruction for the rising generation, and in the opinion of your committee, the time has arrived to establish and endow such a school.

It has been pressed on the committee, that there ought to be several schools created at the same time, so as to have one at least in every Senate district. The objections to this plan are, that as it is an experiment still wanting the test of time, as to its efficacy and general results, a prudent Legislature would hesitate to authorize so large an expenditure at one time, however satisfied they might be as to its practical usefulness and final success. It is self-evident that much experience will be acquired in the management and economy of such a school, which will be of great use hereafter in organizing similar establishments in different parts of the State, in the studies to be pursued, and in the administration of its police, together with a variety of other considerations, which will readily present themselves to the minds of gentlemen who reflect on this subject.

The question now is, in what manner can the State aid its citizens in the pursuits of agriculture, so as to lay a sure and safe foundation for the rising generation, without being accused of hasty and rash legislation? In the opinion of your committee, this can only be done by the liberal endowment of an agricultural school, to be located at some central point, that it may be visited by citizens of this State, and foreigners who may sojourn in our land, with a desire of permanently investing their capital on this side of the Atlantic. It appears to us very clear that to obtain a good opinion of this class, it would be necessary to demonstrate the anxiety of the State to encourage agricultural pursuits. Gentlemen who emigrate from Europe with the intention of making agriculture the main objects of their separation from their native State, would be gratified to ascertain that in New-York a school of science was provided, to which their children could be sent, with a certainty of liberal and safe instruction; and it cannot be denied that the introduction of foreign capital under such circumstances is always beneficial. Such emigrants are the operatives of their own country; and here it is also worthy of observation, that it would not disparage the character of New-York in leading the march to intellectual improvement in the art of agriculture. Considerations of this description demand attention; but they are of minor importance, compared with the lasting and beneficial influence which would diffuse itself throughout the State, raise its character for liberal institutions, and go down to posterity as one of the lasting benefits conferred on it by a wise Legislature.

Your committee are of opinion, that the establishment of an agricultural school will be more beneficial to those who will follow us than who now legislate on the subject; and there is no reasoning so fallacious as that which defers a good act, because its benefits cannot be immediately realized by the donors. It is the same in the establishment of colleges, academies, and other seminaries of information: all have been benefitted by those who preceded them; and more particularly to the science of agriculture is the remark applicable. Experience, we say, experience founded on scientific principles, is most to be courted, never avoided. It has been said, and truly, of our colleges and academies, how few educated in them have distinguished themselves in proportion to the number educated. This may be granted, but it cannot be denied that many who have not risen to the level of public notice, have done great service in the humble sphere in which they have acted. It is so in all the sciences, and some drones may leave the agricultural school without a relish for its continued pursuit.

We, however, entertain the opinion that this school will be an exception. In the pursuit of *classical* studies, from the ill temper or imperfect knowledge of the teacher, or from some obtusity of intellect in mastering studies requiring much research, the student, young and inexperienced as he is, cannot comprehend why he is made and forced to learn a language, not only differing from his own, but one he is more ready to forget than he was to acquire. We speak on this subject the language of enlightened men in both regions of our globe: a few, a chosen few, in whose bosoms the aspirations of future fame and reputation prevail, will overcome the difficulties, and afterwards pursue the studies which were toils in their youth, but now are the solace of manhood. We can confidently appeal to the Legislature for the truth of this assertion. We do not intend to disparage, or in any manner to withdraw legislative aid to seminaries of learning, in which the higher branches of mathematics in connection with the study of classical authors are taught. Far from it; we have cherished, we have more than cherished them. We have endowed them most liberally; and the reward has been to the State, the facilities of education, common to all persons in moderate circumstances.

Still your committee beg leave respectfully to suggest, that if a student at the age of fourteen years (qualified by a previous course of study) should be placed in an agricultural school, under the direction of competent teachers, under a guarded police, combining the study of agriculture as a *science* with the practical operations of every day on the farm, of which he will be one of the cultivators; where constantly will be submitted to his eye, the effects produced by the various operations of dressing and manures; the variety and component parts of soils; the affinity of one to certain vegetables, and their dislike to others; showing the most profitable mode of husbandry. We ask, do you not fix the mind at such an eye to the pursuits of labor, by making labor a pleasure, while you superadd the instructive desire of gain.

These habits, once fixed, will not free themselves from our pupils as they are apt to do from other studies, because they are in unison with the every-day walks of life; while the pursuits of classical learning call for leisure and years of silent study. The first addresses itself to the feelings and the interests of its professor, the other to his imagination and literary fame.

But this is not all: you afford to students thus educated (if not worth a cent) an opportunity of taking farms for a term of years, which will lay the foundation of their future prosperity. You do more: you create a nursery of young men, who will be enabled to disperse throughout the State a system of practical agriculture, on principles founded on the immutable laws of nature. The flux and reflux of the tide is not more certain than the advantages of a well educated farmer, whose opinions, or prejudices if you please, are corrected by actual observation and experience, over the ordinary farmer.

But there are other considerations. You will establish a seminary, in which young men can and will be reared to take charge of other schools in such parts of the State as the Legislature may direct. Men accustomed in early life to habits of industry, connected with the science in which they are engaged, able, competent, and zealous in the pursuit of objects which promise and award more satisfaction and comfort than all the political aspirations which dawn upon youth. The earth always yields to her children the reward of their labors and toils.

The committee are apprehensive that this report is already too much extended; but it is a subject to which they desire to do some justice, not only for its merits, but for the blessings it will bestow on their posterity. They proceed to examine some objections.

If it be said that the institute will not immediately benefit the poorer classes of people, as now proposed, they readily admit it; but they answer, that as an experiment, it is but fair to start with an institution which will command scholars willing and able to pay. The value of their labor, the produce of the farm, its capacity of production, and by the boarding of scholars, will soon demonstrate who is right on the subject of the school, not only paying the interest of the sum invested, but gradually discharging the principal. If we are, then, in the process of time, will these benefits be extended to every county in the State, and we need not urge that the cultivator of the soil is, after all, the main guardian of the liberties of the State.

This subject has, however, been before fully discussed, and as we do not desire to repeat, we refer to the report of the Senate committee, which will be found in document No. 79, 2d volume of Senate Documents, because they are fully aware that if the considerations above

presented, should not prove satisfactory, still the enlightened and business-like view taken by his excellency the Governor, in his last message, ought to claim for this subject an early consideration. He says:

"The subjects connected with the pursuits of our constituents next claim our notice. Among these, agriculture stands first in the order of nature, as well as in the rank of importance. It contributes so essentially to wealth, that the early writers on political economy, regarded it as the only source of wealth. It furnishes the means of human subsistence, and supplies most of the materials for manufactures, and the chief articles of commerce. When the labor of the farmer is bountifully rewarded, all other kinds of industry partake of its success; whatever, therefore, is done by the government for the agricultural interest, redounds to the benefit of every other. There is no occupation which is so diversified in its objects, and requires such various knowledge to conduct it skilfully, as that of agriculture. This knowledge results from experiments in all climates, soils and seasons, and is consequently to be derived from different countries. It receives large contributions from the mechanic arts, and from the sciences of botany, chemistry, and natural philosophy. The patronage of the government can scarcely be directed to a more useful object than furnishing the means of collecting information on this subject, and of spreading it among the agricultural population. A board composed of practical farmers and men of scientific acquirements, would possess great facilities for concentrating this various and scattered information; and the best means of disseminating it among the people would be afforded by a public institution, under the direction of such a board, where agriculture should be taught as a science, and practically illustrated as an art. The general interest felt for this branch of industry will recommend it to your favor; and its intimate connection with the permanent prosperity of the State will make you desirous of contributing to its advancement."

The committee report the same bill as that of 1833. If the principle meets the approbation of the Legislature, (as they have no doubt it will,) they will be prepared to offer further sections to carry out its provisions; without some expression on the subject, they have not deemed it necessary to proceed farther than a skeleton bill. But they earnestly recommend this subject to the serious and deliberate consideration of the Legislature, as a measure more important than any which now load our tables; one in which the people, and the whole people, are vitally concerned; one which cannot be productive of any injury to the public, and which presents the fairest prospect of resulting in the greatest possible good.

LEGISLATIVE AID TO AGRICULTURE.—The following is an extract from the speech of the Rev. M. Allen in the House of the Representatives of Massachusetts, on a proposition to renew "An Act for the Encouragement of Agriculture and Manufactures." Mr. A. has undoubtedly been in the habit of informing himself on this subject by reading the record of "twelve years." Have the Committee of Agriculture in the New-York Legislature read that of one year?

Like other wise measures of government, this encouragement has reached and influenced every man in the community who cultivates a field. This will be doubted by no man, who will compare the manner in which his labor is now performed, and the amount of crops, with what he did and what he received twenty years ago. Your encouragements have called into action the inventive genius of mechanists; the implements of farmers have assumed a new and highly improved character, they begin to look like the new invented instruments of the surgeon for the extraction of teeth; they begin to invite work.

To the fostering hand of Government, which has been extended to farmers, we justly ascribe the continuance for nearly twelve years of a periodical paper, devoted to the instruction and welfare of this class of men. For before men were awakened to the importance of this occupation, its importance in the estimation of the Legislature, every attempt to establish a journal for the benefit of the farmer had proved an entire failure. Now he has before him eleven volumes of the New-England Farmer, forming a valuable text-book, and no man in any profession should be without his text-book. Reading only a single hour in a week, every farmer can receive light and guidance in his path. We may begin to hope, and do hope, it will soon become as ridiculous for farmers to neglect their books as it was once considered for them to read.

It has already been suggested that the soil of the county, from which I came, is not the most favorable for agricultural pursuits. The expense of cultivation there is thought by some to exceed the amount to be derived from it. This was a prevalent opinion before the introduction of modern improvements. The operations of an Agricultural Society have proved that labor and skill can make even despised soils productive. I suppose ten bushels of rye to the acre, twenty of Indian corn, one ton of English hay, and two hundred bushels of potatoes, were formerly considered as average crops. Since premiums have been offered, we have claims for from forty to fifty bushels of rye, from one hundred and fifteen to an hundred and twenty-two of Indian corn, from three to four tons of English hay, and from four to five hundred and fifty bushels of potatoes. Our improvements have not been confined to single acres; in several instances the products of entire farms have been more than quadrupled. There has been reclaimed from a useless state, land covered with briers and bushes, about one hundred acres, for which improvements premiums have been given, besides many operations on a smaller scale, for which no claims were made. This single branch of improvement is worthy of some attention. The conversion of one or two hundred acres from a state in which it was worth little more than five dollars the acre, to a state in which it is worth seventy-five, makes some difference in the wealth of a county. It would, sir, make some difference in your Treasury, should you ever again have occasion to draw a tax from us.

NEW MODE OF SELECTING SEED CORN.—Mr. Solomon Thayer, of New Braintree, Mass., has left in the office of the N. E. Farmer, several ears of Indian corn, which are remarkable for a property in which common corn is often deficient. The small ends of the ear are filled completely out, quite to the extremity, with sound kernels of good size, instead of an inch or two, more or less, of small imperfect kernels, or barren cob, as is often the case, in the product of our corn fields. This was effected by Mr. Thayer, by selecting for seed for several years in succession, kernels which grew at the tip of the ear; and as like not only produces its like but improves its likeness, these top-end kernels being planted, produced two or three more ears to a stalk, which were filled, and the ends *rounded off* with sound corn of larger size than top-end kernels usually are.

We doubt, however, whether these ears are as large as if the largest kernels had been planted. Some cultivators think they have derived advantage by selecting their seed corn exclusively from the largest end of the ear. They tell us that "the nearer the seed is taken from the butt-end the larger will be the ears." Perhaps Mr. Thayer might improve on his praiseworthy experiment by selecting seed corn for two or three years from the large end of his improved ears; and then plant a while from the middle. Dr. Deane, directed in shelling seed corn, to select about an inch from each end of the corn, planting the middle only. But experiments are of more weight than authority in the scale of improvement.—[N. E. Farmer.]

PLANTING CORN.—Although the following experiments are on a small scale, yet they are deserving the attention of the farmer. The article is from the Long-Island Star.

Having made some little experiment in planting corn, I have concluded to relate my doings, and give the result. Six years ago, I planted eight and a half square rods of corn, two feet in width one way, and one foot the other, and one grain in a hill. The result was, I had eleven bushels of ears, making at the rate of 207 bushels to the acre, which I conclude is nearly double that which it would have brought by being planted in the ordinary way. The land was not first rate, tolerably good, and a sprinkling of coarse dung ploughed in.

I last spring planted three-quarters of an acre, three feet three inches in width one way, and about two feet four inches the other way, and put three grains in a hill: there were on the ground about fifty young apple trees, which had been planted three years, and two large pear trees, and I planted four rows of potatoes and a patch of vines, and I conclude that fifteen square rods will not overrate the deduction which ought to be made—that leaves 105 square rods. The result was, I had 82 bushels of ears of corn, which is at the rate of about 125 bushels to the acre; if it had been planted in the common way, I think it would have fell short of producing 100 bushels to the acre.

And I planted half a square rod one and a half feet apart each way, one grain in a hill, seventy-two grains. After it was up, I sprinkled between three and four quarts of unleached ashes on it, having heard say that it was of great advantage to the crop to break off the suckers or scions, which I did to one-half of it twice or thrice. I thought that which I suckered did not look quite so healthy as the other; however, there was little difference. When I gathered, the result was this: I had from the part that was suckered forty-eight ears, weighing sixteen and three-quarters lbs., filling a half bushel, rounding it ever; from the other part I had forty-four ears, weighing eighteen and three-quarters lbs. measure, about the same as above. Some days after, I shelled the whole together, and had exactly half a bushel—this is producing at the rate of 160 bushels of corn to the acre, or 320 bushels of ears; the last is as large an increase as ever I recollect hearing of. From these small experiments, I have ascertained to my satisfaction, that a piece of ground will produce the most corn by planting one grain in a hill; as to the width, I have not got exactly, but I venture to say it should not be more than two feet, nor less than one and a half feet apart. I should take one foot nine inches.

Of ploughing and harrowing corn, I am about to say a word in favor of the harrow, although I know that in these days it amounts almost to heresy. In the first place, I allow that where people do but little work in the corn, they had better do it with the plough; but to put it in good order, I think it can be done better with both, than with either plough or harrow separately, for you may harrow corn before it will answer to plough; then every time after ploughing, let it lay a few days, and go through it once in a row with the harrow; it will then keep clean longer, and be in better order to plough again. In my opinion, people in general ought to plough as much as they do, and make use of the harrow some too, and their corn ground would be in better order than it commonly is.

TRANSPLANTING RUTA BAGA.—Mead Atwater, of Brighton, has called at the office, and communicated to us, verbally, his success in cultivating the Ruta-baga the past season.

Mr. Atwater informs us that he sowed the seed about the middle of June, on seed beds,

and when the plants were a suitable size, transplanted them out at suitable distances. The plants were afterwards hoed, and kept clear from weeds. At the proper season for harvesting he went over the ground with a sharp garden hoe, and struck off the tops which he afterwards gathered up with a rake. He then with a dull hoe pulled the turnips out of the ground. The produce he thought was at least one thousand bushels per acre, and the quality as fine or finer than those which had been allowed to stand where they were sowed.

Mr. Atwater expressed himself in favor of transplanting, instead of sowing the seed where they were to grow, for the following reasons: that it saved once hoeing, which he thought more labor than to transplant them. That the ground might be ploughed at the time of setting, and would continue in better condition for maturing the crop than when ploughed earlier in the season.—[Goodsell's Farmer.]

Vegetation under Glasses, without Change of Air.—Dr. Aiken, the secretary to the Society of Arts, read a letter addressed by Mr. N. B. Ward to Mr. R. W. Solly, in which the former states that, nearly four years ago, he observed, on the surface of some moist mould in a large bottle loosely covered with a lid, in which he had buried the chrysalis of a Sphinx, some minute specks of vegetation. A plant of Poa annua and one of Aspidium had made their appearance. Curious to observe the growth of plants in such a confined situation, he placed the bottle outside one of his windows, with a northern aspect, where they remained more than three years; during which time the lid was never removed, nor was any water given to them in that period. The plants grew very well: the Poa annua flowered the second year, but did not perfect any seeds; and the Aspidium produced four or five new fronds every year. They ultimately perished, in consequence of the admission of rain, which rotted them. The experiment has been repeated on more than sixty species of ferns, and with uniform success. The bottom of a box being previously covered with broken pieces of brick, tile, &c. the ferns are planted in a compound of vegetable mould, sand, and Sphagnum palustre L.; they are then watered most copiously, and the superfluous water allowed to drain off, for several hours, by means of a hole in the bottom of the box. A plug is then put in tight, the box covered with a glazed lid, and no further care is required than that of placing the box in the light. In this state, ferns will grow for years without any fresh water. A box placed on one of the Society's tables, and which attracted great attention, contained, among others, the following species: Asplenium lanceolatum, Asplenium Adiantum nigrum, Adiantum pedatum, Adiantum pendulinum, Blechnum boreale, Cyathea fragilis, &c.; with four or five species of mosses growing in the same box, planted in the beginning of last May. Mr. Ward adds, that many other plants which delight in humid situations, and which he had previously attempted, in vain, to grow in town, succeed equally well under this plan of treatment; such as the double-flowered Anemone nemorosa, Listera nidus avis! &c.; and he feels well convinced that the deteriorating influence of town air depends more upon mechanical than upon chemical causes. We saw some of the above-mentioned glasses and plants at the November Meeting of the Linnæan Society.—[Loudon's Magazine.]

Securing a Crop of Fruit on Pear Trees.—Take a pair of scissors (such as are used in thinning grapes), and go over the corymbs of flowers, or rather of flower-buds, as soon as they are sufficiently elongated to allow the points of the scissors to pass between them (that is, some days before the blossoms are expanded), and thin them; leaving only five or six blossoms in each, according to the size of the corymb; always preferring to leave the flowers which have the stoutest stalks, and those which are nearest the centre. This operation has the effect of diverting the sap to the flowers which remain, and gives them sufficient strength to set from one to three fruits in each umbel; which will prove a sufficient crop, and well repay the labor bestowed. Another mode, less tedious than the above, is also practised here, with success, on young trees. It consists in deferring that part of the pruning of them which is termed shortening the young wood, until the blossoms are in about the same state as is described in the above directions for thinning, and then shortening them back to the required length. This also checks the progress of the sap, and enables the tree to set fruit very freely. I am aware that my plan is a tedious one, and one that is almost impracticable on a large scale; but it is decidedly an excellent plan for dwarf trees in gardens, whether they are cultivated in the *quenouille* mode, against walls, or as espaliers; as these trees come within the reach of the hand, of a pair of steps, or of a ladder. In the hope that these remarks may, through your indulgence, avail my fellow-laborers in horticulture, at the coming season, I am, sir, yours, &c.

Bernard Saunders.

Nursery, Island of Jersey, Dec. 6, 1833.

We recommend the above article to the particular attention of young gardeners. The system of disbudding advised in the preceding paper by Mr. Callow, and that of thinning out blossoms suggested in the above paper by Mr. Saunders, are applicable to all fruit trees, and, if generally adopted, would insure important results. We know an instance of a large apple orchard, the property of a commercial gardener in Kent, in which a knife has never been used: every thing is effected by disbudding, and pinching out young wood with the finger and thumb. The proprietor is not a scientific gardener; and he adopted the above practice from no particular theory, but simply from his own observation and experience, to save labor, and to insure good crops of large fruit. We hope to see his orchard next summer, and to report on it.—[Loudon's Mag.]

Uvedale's St. Germain Pear.—A fine specimen of this pear has been sent us by Dr. Hamilton of Plymouth: its dimensions are, "13½ inches for the transverse, and 16½ inches for the longitudinal diameter; and its weight is 1 lb. 11½ oz. The tree from which these pears were gathered has, in former years, produced fruit of a considerably larger size, and in much greater abundance, than in the present season, and five years since a pear was gathered from it which weighed above 2¾ lbs. —William Hamilton. 15 Oxford Place, Plymouth, Nov. 14, 1833."

Sap of Trees.—The most important information which you will, I think, be able to give to the modern gardener respects the chemical changes which take place in the sap of trees, and the motions of the sap at different periods of the year. That it descends in our trees through the bark (I exclude the palm tribe generally), from the leaves, cannot be questioned; nor that it ascends through the alburnum into the leaf: but that a portion of the fluid, which has become true sap in the leaves, passes from the bark into the alburnum, and there joins the ascending current, and feeds the young shoots and leaves, is not generally understood by gardeners; nor that the fruit is fed by a similar means; nor that the sap is deposited in the alburnum, to afford materials for leaves, or to feed the blossoms and young fruit of the succeeding spring. The coagulum which gives the matter of the new layer of bark in the spring is derived from the same source, though the arrangement of the vessels and fibrous texture of the bark is given by the fluid which descends by the bark. I remain, dear sir, &c. T. A. Knight. Downton, Dec. 17, 1833.

Mr. Telfair is no more.—Ever since the death of his accomplished lady, which took place the preceding year, our valued friend, as he himself had informed us, seemed to have lost every earthly tie; and after a violent illness of only five days, he breathed his last on July 14, 1833. In his death, science has to deplore the loss of one of her most ardent votaries, and society one of the best of men.—[Dr. Hooker, in Bot. Mag., Dec. 1833, t. 3286.]

Flowers evolve Heat.—The flowers of certain species of Aroideæ have been found to disengage heat in the course of their flowering; and in Jameson's Phil. Journ. for January, 1834, there is a statement of the degrees of heat which Dr. Schultz has observed the flowers of *Caladium* pinnatifidum, as produced in a hot-house in the Berlin Botanic Garden, to evolve. The flowers of a spadix blossom and decay "in the space of about twelve hours, and are in their greatest perfection between 8 and 10 in the evening." Dr. Schultz did not, previously to 5 o'clock in the afternoon, find the flowers of a spadix evince a greater temperature than that of the place in which they were kept: this was 61·2° Fahr. "At about 6 o'clock the flower, which had been previously without any smell, gave out a very powerful odor, and indicated, on trial, 65·1°; at 7 o'clock, 70·2°; at 8 o'clock, 74·7°; at half-past 8, 76°; at 9, 78°; at 10 o'clock, 81°; and this last appeared to be the greatest height, since there seemed to be no farther increase up to 11 o'clock. During the increase in temperature evinced by the flowers, the disengagement of the odor likewise increased. This became so powerful that the place was impregnated with an ammoniacal vapor. In the morning the temperature of the flowers had fallen to the temperature of the air," which, it is inferable from the absence of a mention to the contrary, had remained uniform throughout the period named.—[Loudon's Magazine.]

Dale's Hybrid Turnip.—Mr. Allnatt, sen., has a moderate breadth of that new and valuable field turnip, Dale's hybrid, the bulb of which is said to be as solid and nourishing as a Swedish turnip, and as tender as an early Dutch. It is also said to be not in the least degree injured by the frost, and it is thought that it will prove to be invaluable for field produce in wet soils. The seed of this variety is also for Mr. Ronalds; and, if a fourth part of what we heard of this turnip be true, it must be a prize of immense value to the farmer.—[Loudon's Magazine.]

[The seeds of the above can be had of the seedsmen in New-York.]

Carrots for Live Stock.—The Altrincham carrot, grown in rows 18 inches apart, and the carrots at the same distance from each other in the rows, the roots attaining the thickness of a man's thigh, and the length of three feet, with a vigorously growing top, for feeding cows or other cattle.—[Loudon's Magazine.]

[The seeds of these carrots are for sale by H. Huxley & Co., 81 Barclay street.]

Curious Case of Farriery.—Some time ago, a valuable mare, belonging to Mr. C. Linny, of Baylin, was gored by a bull, and the entrails protruded through the wound. As there appeared no possible remedy, the animal was left in the field to die—when a neighboring man named Moran undertook to cure her. After returning the entrails and sewing up the wound, he procured a large piece of sheet lead, placed it over the spot, and afterwards drew the skin across it and sewed it up. After an interval of some days, he again ripped the skin open and removed the lead, when the wound appeared completely healed. The skin was a second time sewed up; and in less than a month after, the animal was able to plough as well as ever.—[English paper.]

CULTIVATION OF BARLEY.—Although this grain is of very considerable importance, yet we are inclined to think that the apple, the grape, and other fruit, from which liquids are obtained, will prevent a great increase of barley culture. For most of the following information we are indebted to Goodsell's Genesee Farmer.

More than two-thirds of the barley raised in the United States is the produce of this state, and this is almost wholly grown in the northern and western parts. The quantity marketed at Albany and its neighborhood, in 1833, is stated at 450,000 bushels. This, estimated at seventy-five cents a bushel, makes an aggregate of 337,500 dollars.

Barley, as a field crop, has been cultivated from time immemorial. It is not known of what country it is a native, nor at what time it was first cultivated. At this time it is much more extensively cultivated in England than it is in this country. Few crops require more care in the cultivation, or are more apt to disappoint the cultivator in all the good wheat growing districts in the United States, than barley.

There are six species of barley at present cultivated in England, viz.:

Spring or Summer Barley.—There are two varieties of this species, but the one commonly cultivated (*H. vulgare*) may be distinguished from the Siberian barley by the heads being much larger, and, as well as beards, arranged in double rows, whereas the other is single, which the heads appear flat. This is considered the best kind of barley for malting, as the husk is light.

Winter Barley.—There are three kinds of winter barley which are at present cultivated for profit, besides two or three species and varieties that are cultivated as matters of curiosity.

The common or long eared Barley (*H. distichon*) is perhaps cultivated more than both the other species. Both heads, and awns, or beards, of this kind, are much longer than those of other kinds of winter barley. The heads of this kind are flat.

Square Winter Barley.—The heads of this kind, though not as long as the foregoing, are much thicker and have the appearance of being square, the grains being arranged in four distinct rows. This is accounted a harder species than the long eared, and not as subject to be injured by the winter.

Big or Barley big.—This species has large square heads, with grains arranged in six rows, and is cultivated on account of its being earlier than the common or square barley. It is not valued so high for malting as either the other two varieties mentioned.

If the different kinds are mixed they will not command as good prices from the brewer, on account of requiring different lengths of time in malting. The loss in this way last year is stated at ten per cent. upon the whole product, or equal to 45,000 bushels.

Soil and Climate.—Barley succeeds best in a cool damp climate, and there upon a fine warm sandy loam; but where the climate is warm, and dry, as in most of New-York, a loose soil, rather moist than dry, produces the best crops.

The best crops of barley grown in the state of New-York are upon a high range of table land on the north side of the Mohawk river, near Fairfield. From the elevation of this range of land, it is too cool to produce either corn or wheat, unless when the seasons are usually favorable, but it produces barley in great perfection. It does better upon corn than wheat soils. It may be sown upon a clover ley, or after a hoed crop, which has been well manured; but recent manure should by no means be applied to the barley, as it induces a rank growth, and causes the grain to lodge. When the plants are three or four inches out of ground, the roller may be passed over the field with great advantage. By often burying the crown it causes the grain to tiller, or multiply its seed stalks, and causes a beneficial compactness to the soil. It should be sown upon the fresh ploughed soil, and well harrowed in. Grass seeds may be sown with this crop to advantage.

In preparing lands for winter barley, the course taken is the same as in preparing for wheat, and the sowing done in the same manner, but there should be twice as much seed sown upon an acre as of wheat.

The seed for light should come from strong land, otherwise it degenerates in bulk and fullness. A change of seed is more important in this than in most other grain. The best seed for sowing is that which is free from blackness at the tail, and is of a pale yellow color, intermixed with a bright whitish cast; and if the rind be a little shrivelled, it is so much the better, as it shows that it has sweated in the mow, and is a sure indication that its coat is thin.

Fresh stable manure should never be used upon land to be sown with barley, as it will generally be found to do more hurt than good. Lands for barley should always, where the soil will allow of it, be ploughed deep, and after seeding, the process should be finished with the roller. There is not a crop raised where the use of this implement is more important. By examining the plant, it will be seen at once that it is not well calculated to stand the drought, as the roots are small and do not penetrate deep, and it has a great proportion of broad, thin foliage.

Summer barley should be sown about the same time as oats, and lands capable of producing good crops of the one will be found suitable for the other.

From the great quantity of foliage produced by winter barley, when sown early in the fall, in countries where the snows lie deep and long, it is found advantageous to feed it with calves or sheep previous to the setting in of winter, to prevent it from moulding.

Harvest Management.—There is more care required in the management of this than any other crop raised upon a farm. If cut too soon, it will be found very difficult to separate the awns, or beards, unless thrashed in a machine; if allowed to stand too long, the ears are apt to break off at the bend of the straw near the head. If cut green, and suffered to remain upon the ground, to render the awns brittle, through rain storms, many of the grains will vegetate, which renders them of little worth for malting. Where farmers are provided with thrashing machines, the better way is to allow barley to stand until fully ripe, then cut it with a scythe, and let it remain upon the ground a day or two, if the weather is favorable, then take it directly to the machine, and thrash and clean it.

The quantity of barley produced per acre is quite variable. We have sowed good lands, that did not produce more than twelve bushels; and we have seen upon lands that were no better in quality, nor better prepared, crops that would average fifty bushels, much depending upon climate for its perfection. In England the average produce is allowed to be about twenty-eight bushels per acre.

From the uncertainty of the crop, barley is cultivated but little for any other purpose but malting for beer, so that the market price will depend upon the distance at which the crop is raised from a brewing establishment.

In some parts of Europe barley is extensively used for making bread; but in this country, where, in most parts, a bushel of wheat may be raised as cheap as a bushel of barley, it is not likely to come into use as an article of food.

OLD CHEESE.—A good quantity of old cheese is the best thing to eat when distressed by eating too much fruit, or oppressed with any kind of food. Physicians have given it in cases of extreme danger.—[Northern Farmer.]

[To the author of the following Report, the result of five years' practical experience, the thanks of the Society and the honorary Silver Medal were voted by the Directors.]

Report on the Value of Bone-Manure, in comparison with ordinary Farm-Yard Manure. By the Honorable Captain W. OGILVY, Airlie Castle.

Mr. Watson, of Keilor, introduced the use of bone manure into Strathmore, having seen it used in England. I am not certain in what year he began to make experiments with it, or to employ it extensively, but I remember well that the great deficiency of farm-yard dung in 1827 (consequent on the almost total failure of the crop of the previous year) first induced me to try 4 acres of turnip without other manure, sown with 15 bushels of bone-dust per acre, which I obtained from Mr. Watson: it cost 3s. per bushel, or £2 5s. per acre. The crop of turnip on these four acres was at least equal to the rest raised with farm-yard manure; but as the whole of the turnips were pulled, and the land received some dung before the succeeding crop, much stress cannot be laid on the circumstance of the following white crop and grass being good.

Next year, 1828, encouraged by the former successful experiment, eight acres were sown with turnip, solely with bone-dust; the soil a light sandy loam; the subsoil gravel and sand, coming in some places nearly to the surface, which is very irregular, but in general has a south exposure. This field had been broken up with a crop of oats in 1827, after having been depastured six years, principally by sheep. The quantity of bone-dust given was 20 bushels per acre, and cost 2s. 6d. per bushel, or £2 10s. per acre. The turnip-crop was so heavy, that, notwithstanding the very light nature of the soil, it was judged advisable to pull one-third for the feeding cattle, two drills pulled, and four left to be eaten on the ground by sheep. The following year, 1829, these eight acres were sown with barley and grass-seeds, and the produce was 57 bolls 1 bushel, or 7 bolls 1 bushel nearly per acre, of grain, equal in quality to the best in the Dundee market, both in weight and color. Next year, a fair crop of hay for that description of land was cut, about 150 stones an acre; and though I am now convinced that the field should rather have been depastured the first year, yet the pasture was better than it had ever been known before for the two following seasons, 1831 and 1832. It is worthy of remark, as a proof of the efficacy of the bone-manure, that in a small angle of this field, in which I had permitted a cottager to plant potatoes, well dunged, and which, after their removal, was included in one of the flakings of the sheep, and had (one might have supposed) thereby had at least equal advantage with the adjacent bone-dust turnip-land, both the barley and grass crops were evidently inferior, and this continued to be observable until the field was again ploughed up. A very bulky crop of oats has been reaped this season, probably upwards of eight bolls per acre, but no part of it is yet thrashed.

Having detailed what may be considered a fair experiment during the whole rotation of the above eight acres, I may add, that turnip raised with bone manure, and fed off with sheep, has now become a regular part of the system on this farm; 15, 20, and, last year, 25 acres were fed off, and invariably with the same favorable results, with the prospect of being able to adopt a five-shift rotation, and to continue it without injury to the land. Every person in the least acquainted with the management of a farm, of which a considerable proportion consists of light, dry, sandy loam, at a distance from town-manure, must be aware of the importance of this, from knowing the expense at which such land was formerly kept in a fair state of cultivation; indeed, the prices of corn for some years past would not warrant the necessary outlay, and large tracts of land, capable of producing barley little inferior to that of Norfolk,

must speedily have been converted into sheep pasture, but for the introduction of bone-manure.

Note.—For the last four years, 25 bushels of bone-dust have been given to the acre; the price this year was 3s. per bushel, or £2 15s per acre.

Manual Labor Department of the Lane Seminary.—The fourth Annual Report of the Lane Seminary at Cincinnati, Ohio, has recently appeared, and contains much that is interesting in reference to manual labor.

This institution is another of those "Visible Illustrations of Benevolence," which are so rapidly and so happily multiplying in our country. It owes its origin to the benevolence of a single merchant, and its broad foundation to individual contributions; and the fact that these were chiefly presented by "*the East*" to "the West," affords gratifying evidence that narrow local feeling is not yet predominant over the spirit of beneficence. The Seminary has three professors in the theological department, and three in the department of preparatory study, which is designed for those whose age or circumstances prevent their pursuing a collegiate course. One building for one hundred students, and two houses for professors, are already built, and a chapel is soon to be erected. In consequence of the provision of funds, the expenses of each student do not exceed $60 or $80 annually.

But the principal peculiarity in this institution is in its provisions for manual labor, and the ground on which it is placed. It is with peculiar pleasure that we find "*physical education*" spoken of, in connection with "talents and acquisitions," and the "spirit of holiness," as "*of fundamental importance* to ministerial energy and success." When will the acknowledged truth, that "the mind is influenced by the state of the body," be adopted *practically*, in our schemes of education! On the subject of manual labor in connection with study, the Committee remark in general:

"Whatever may be the theoretical objections of good men, practically unacquainted with this system, to its practicability and importance, it is to the directors no longer a matter of experiment, but of sober fact, resulting from three or four years' experience, that the connection of three hours daily labor, in some useful and interesting employment, with study, protects the health and constitution of our young men; greatly augments their physical energy; furnishes to a considerable extent, or entirely, the means of self-education; increases their power of intellectual acquisition; facilitates their actual progress in study; removes their temptations to idleness; confirms their habits of industry; gives them a practical acquaintance with the useful employments of life; fits them for the toils and responsibilities of a newly settled country; and inspires them with the independence of character, and the originality of investigation, which belong peculiarly to self-made and self-educated men."

They make one remark, which we presume will explain more than one of those failures which have led some to doubt the practicability of the system:

"No small injury is threatened to manual labor institutions, and no small embarrassment has been felt by this seminary in common with others, in consequence of the erroneous impression too commonly prevalent, that no funds will be needed in a manual labor institution, even when the student has no trade, no knowledge of any kind of business, no power of accomplishment, and little disposition to perform the labor offered him, as a means of paying his expenses.

"The committee need not inform such young men, and the community generally, that no institution can long sustain itself and prosper under such circumstances."

While they consider the pecuniary benefit of the plan as of minor importance, compared with the health and vigor it produces, the report furnishes encouraging evidences that much may be done in this respect under favorable circumstances. In consequence of the contiguity of the seminary to Cincinnati, printing has been introduced as one branch of labor, and the novelty and success of this department renders the details interesting.

"During the early part of the last year, an arrangement was entered into by the committee, with Messrs. Corey & Fairbank, booksellers of Cincinnati, to furnish the students with several printing presses, and with stereotype plates for printing Webster's spelling book. This establishment has been in operation nearly a year, and now embraces six presses, furnishing work for twenty students.

"About 150,000 copies of the above named work have been printed, and about 1000 copies per day are now issued from the presses.

"The students have recently commenced the printing of an edition of Dr. Eberle's Treatise on the Diseases of Children, a valuable medical work, which requires fine paper and the best workmanship; and it is believed that in all respects the execution of the work is highly satisfactory to the employers."

The report from which we are quoting is a very handsome specimen of the skill of the students. In regard to pecuniary results, the committee state:

"The average amount earned by six printers in ten months by working about three hours per day, - - - - - -	$120 00
"Average amount earned at the same rate in a year, - - - - -	144 00
"Amount now earned by twenty students per week, - - - - -	50 82
"Average amount (by each student,)	2 54
"Average amount earned by twenty students at the same rate as above per year, - - - - - -	132 08

"In view of these results, and the small annual expense of this institution, it is hardly necessary to remark, that the students in this department have the high satisfaction of providing the means of their own education without aid from friends, or from the benefactions of the church.

"This arrangement is the more important for our young men, from the fact that a knowledge of the business is easily acquired; several of the students having gained such an acquaintance with the employment in three or four weeks, as to be able to earn forty-six cents per day, or two dollars seventy-six cents per week, by working three hours per day.

"This operation is highly satisfactory to the committee, not only as furnishing a useful and advantageous employment to the students, but as it is unattended with any expense to the institution in furnishing presses, or in the printing and disposition of the books. From nearly a year's full experiment, the committee are fully persuaded that this branch of our manual labor has peculiar advantages in respect to its simplicity, its appropriate exercise, its general utility, and pecuniary results.

"In accordance with the special request of the printers' association of this institution, it is intended, as soon as practicable, to adopt measures for the extension of this establishment; and from the facilities here enjoyed for conducting the printing business, it is hoped that a large portion of our students, at no very distant period, may enjoy the advantage of this employment."

In the cabinet shops connected with the institution, materials have been furnished, and work paid for, by an establishment in Cincinnati. The whole is placed under the superintendence of some of the most skilful workmen among the students, who are responsible to the employers for all that is done, and have secured a pecuniary profit of $701 35 in five months. The profit to individuals is thus stated by the committee:

"Several of the best workmen have earned from twelve and a half to fifteen cents per hour, and have received for their services during the time above specified, from forty to sixty dollars each; while those who have recently commenced learning the business, have earned from ten to twenty dollars each.

"While the fact is here rendered obvious, that a first-rate mechanic is entirely independent in this institution, and can support himself by his three hours' labor without infringing at all upon his study hours, the committee wish it to be understood that such results are secured only by young men of energetic, industrious, and economical habits; and that those of different character, and who have little or no knowledge of tools, ought not to rely, to any considerable extent, at least for the first year, upon their labor as the means of paying the expenses of the institution."

A farm of 110 acres is also annexed to the institution, from which additional advantages are anticipated.

Such are the results of one of the most recent experiments on the manual labor system, and they seem to us to confirm the position we have maintained, that while this, like every other system of education, needs *a foundation* on which to rest, and the faithful, persevering efforts of skilful agents, it may be made a means of *economy* in education, and of imparting that vigor of constitution which renders that education doubly valuable, and secures to the individual, enjoyments and hopes which are beyond all price.—[Annals of Education.]

The Veterinary School.—The Establishment is now in its Eleventh Session, under the Lecturer appointed by the Society, Mr. Dick, a Graduate of the Veterinary College of London. Students from various parts of the country have received instruction in the anatomy and diseases of the horse, and other domestic animals, in the best system of treatment and cure, in stable management, and in the most approved and scientific modes of shoeing; several of these students have been sent to attend the class by Local Agricultural Associations, and others have attended on their own account. The hour of lecture is accommodated to the convenience of students attending the Agricultural and other Classes in the University. Those students who attend two courses, and are afterwards found qualified at the annual examination by the Committee of Medical Examinators, receive Certificates.

Mr. Dick occasionally delivers a Popular Course of Lectures to a class of gentlemen.

The Lectures and Demonstrations for the Session 1834-35 will be commenced in November next, at the new Lecture-room in Clyde street, Edinburgh.—[Highland Transactions.]

Poultry in Paris.—The annual consumption of poultry and small game in Paris usually amounts to ten millions of kilogrammes (near twenty-two millions of English pounds.)

Of this quantity one-third is of prime quality, and sells at 1 fr. 40 cent. per kil.; one-third of second quality, at 1 fr. 20 cent. per kil.; and one-third of common quality, at 1 fr. per kil.; averaging 1 fr. 20 cent. per kil., (or about 5½d. per lb. English,) which is also the average price of butcher-meat.

After the revolution of July, when the large game of the royal forests was destroyed, it was with difficulty that it could be sold in Paris at 40 centimes per kilogramme (2d. per lb.)

It is calculated that the inhabitants of Paris consume annually at the rate of between twelve and thirteen kilogrammes of poultry per head.—[Quarterly Journal.]

Recipe for Scarlet Fever.—A very simple remedy, says a correspondent, for this dreadful disorder, is now using in this city with good effect. It is merely a mixture of Cayenne pepper, salt, and vinegar, used as a gargle.—[Commercial Advertiser.]

The Lynn Tribune recommends shoemakers' wax as an excellent remedy for the rheumatism. Put two or three pieces, about the size of the thumb, on the hollow of the foot, and the cure is certain.

On propagating the Purple Broccoli from Slips, and on the Agency of Manure prepared from Sea Weed in improving various Vegetables. By Mr. T. Rutger. [From the London Gardeners' Magazine.]

Sir,—On reading Mr. Kendall's article upon the propagation of cabbages from slips (IX. 226.), I feel inclined to draw the attention of your readers to the growing of purple broccoli in the same way; a practice which was adopted, some years since, in west of Cornwall, and, for aught I know, may be still continued there. The variety thus treated seemed to be rather peculiar in its habits, and compact and handsome in its growth. The head being removed for culinary purposes, the method was to let the stump remain, which had already thrown out sprouts* below; and these, on being left to grow, showed no indication to form heads for the season. In the month of June, the sprouts were sufficiently advanced to be slipped off; and, after being exposed a day or two in the sun to cauterise the wound, they were planted out in the usual manner. In two or three weeks they had taken root, and in the course of the autumn made fine stocky plants. I have seen many instances of the broccoli thus grown having heads three feet in circumference, and as close and compact as possible; but this extraordinary luxuriance was, I believe, principally owing to the nature of the manure used.

This manure consisted principally of sea weed, of the genus Ulva, several varieties of which are drifted on the sands in immense quantities in stormy weather. The weed forms a principal article of manure to the farmers as well as to the market-gardeners in the neighborhood of Penzance and other parts in the west of England, and is sought with avidity by both classes after a heavy gale, it being found, from experience, to be an excellent manure for a single crop. The farmers in that neighborhood mix it up with earth collected from furrows ploughed at certain distances in the field, and with sea sand, and, thus mixed, it rapidly decomposes, and soon becomes fit for use. The market-gardeners and cottagers frequently make use of it as a manure, in its raw state, for onions, potatoes, &c. For onions, the ground is so prepared, that, after a layer of it is spread over the surface, there may be a sufficient quantity of earth to cover it about two or three inches thick; after this has been levelled, the seeds are sown and raked in, and the produce, in many instances, is but little, if any thing, inferior in size to the onions imported from Lisbon. For potatoes, it is used either by putting a layer of it over the sets, whether in furrows or beds, and afterwards covering it with earth; or putting a layer of it first, placing the sets upon it, and then a covering of earth. In reference to the kidney potato, I think I may safely aver, that in no part of England are potatoes of this description to be found equal in quality to those grown in the neighborhood of Penzance; where, by extraordinary labor and care, they are frequently brought to market from the open ground by the middle of May. The sort principally grown for an early crop is known there by the name of "the Yorkshire kidney." I am not certain if this be its proper appellation, but it forms a long, handsome, flattish tuber, with the crown of a purplish hue.

With regard to the broccoli noticed above, in the ordinary course of garden culture, it forms a head averaging about two feet in circumference; its flavor is excellent, and, as such, it may be well recommended to notice; more especially as, by its being propagated from slips, it is secured from any variation from its natural habit.

I am, sir, yours, &c. T. Rutger.
Shortgrove, Essex, Oct. 1833.

*The following fact evinces the capacity of broccoli for forming sprouts: "Two dozen of broccoli, a dozen of which were very fine and fit for table, were within the last few days, cut from one stem, grown in the garden of Mr. Lewis, nurseryman, of Chelmford." [Bury and Norwich Post, May 29, 1833.] See also a notice of a broccoli plant which had stood six years, and produced good heads from sprouts every year, VI. 492.—J. D.

Agricultural Museum.—Professor Low, the scientific teacher of agriculture in the University of Edinburgh, has long been engaged in forming, at his own private expense, an agricultural museum; and we are most happy to learn, from the Scotch newspapers, that government has lent pecuniary aid to so useful an undertaking. Whether any exhibition of the kind instituted by Messrs. Drummond at Sterling, and followed by Mr. Lawson of Edinburgh, and Messrs. Dickson and Turnbull of Perth, is to be combined with this museum, we have not learned; but we are most happy to see the government of the country taking an interest in such national objects. We hope the time is not far distant when a sum will be advanced to complete the Thames tunnel, and another to establish the Horticultural Society's garden at Chiswick on a permanent footing. If this is not done by government, we hope that, when the metropolis and its environs are put under one system of self-government, they will have a metropolitan garden, either at Chiswick or elsewhere, worthy of the first city in the world, and open to all its citizens.—[Loudon's Magazine.]

The Enjoyment of Reading.—We said a word or two on this subject in our preceding volume; and on account of its great importance to every individual, we cannot help again adverting to it. We recommend those who have not taken the *Penny Magazine* from its commencement, at least to purchase No. 95, for September 28, 1833. It is most gratifying to reflect that there is not a human being, endowed with health and the ordinary condition of the human faculties, that may not participate in what Sir John Herschel appears to consider the greatest of human pleasures. It is delightful to foresee that, when the whole of society shall be so far educated as to derive pleasure from reading, and when books are as common as bread and potatoes, the hardest-worked agricultural laborer or mechanic, when he goes home from his day's toil, may plunge at once into intense enjoyment by taking up a book. The most gratifying circumstance respecting this enjoyment is its universality, and its applicability to all countries, all future ages, and to every human being in tolerable health and above destitution. It is equally applicable to man, whether in prosperity or in adversity; whether in prison or free; and even, to a certain extent, whether in health or sickness. Another gratifying prospect anticipated from the result of universal reading is, universal improvement of worldly circumstances. Let any taste become general, and the regulations and habits of society will accommodate themselves to that taste. The hours of labor, at present, afford barely time for eating and sleeping; but when reading becomes a necessary of life to every, even the lowest, class of society, they will be reduced so as to afford time for that enjoyment also. Surely, if nothing else were to be gained by a system of national education, but the power of conferring so much happiness on millions, it would deserve the patronage of every benevolent mind, and be worthy the adoption alike of governments professing to be paternal or to be representative. But the main object which we have now in view is, to impress Sir John Herschel's statement strongly on the mind of the young gardener, so as to encourage him, above all other earthly things, to cherish a taste for reading in himself, and in all those with whom he may have any thing to do. Another point to which we wish to direct attention is the necessity, when a national system of education is established, of adding to every school, not only a garden, a workshop for teaching the simpler operations of the mechanical arts, and a kitchen for teaching the girls cookery, but also a circulating library for the benefit of the whole parish. In furtherance of these objects, we cannot resist giving the following short extract from Sir John Herschel's address: "Of all the amusements which can possibly be imagined for a hard-working man, after his daily toil, or in its intervals, there is nothing like reading an entertaining book, supposing him to have a taste for it, and supposing him to have the book to read. It calls for no bodily exertion, of which he has had enough, or too much. It relieves his home of its dulness and sameness, which, in nine cases out of ten, is what drives him out to the alehouse, to his own ruin and his family's. It transports him into a livelier, and gayer, and more diversified and interesting scene; and, while he enjoys himself there, he may forget the evils of the present moment, fully as much as if he were ever so drunk, with the great advantage of finding himself the next day with his money in his pocket, or, at least, laid out in real necessaries and comforts for himself and his family,—and without a headach. Nay, it accompanies him to his next day's work; and, if the book he has been reading be any thing above the very idlest and lightest, gives him something to think of besides the mere mechanical drudgery of his every-day occupation,—something he can enjoy while absent, and look forward with pleasure to.". . . "If I were to pray for a taste which should stand me in stead under every variety of circumstances, and be a source of happiness and cheerfulness to me through life, and a shield against its ills, however things might go amiss, and the world frown upon me, it would be a taste for reading."—[Penny Magazine.]

The Nursery and Seed Business in France—as it appears to me, is in a better position here than in England; that is to say, it is progressively increasing, in consequence of the increasing interest taken in every thing relating to the improvement of the country, and especially of agriculture. The cultivators of ornamental plants are perhaps suffering a little; for, if it were not for some fashionable flowers, such as roses and georginas, they would not be able to support their establishments. One reason of this is, that they have increased in number amazingly within these few years.—V. Paris, Dec. 28, 1833.

Lupines.—Mr. David Douglas, "in his first visit to the shores of Columbia, detected no less than seventeen species of lupine; and several species have rewarded him on his second visit, as well as in California."—[Dr. Hooker, Bot. Mag., Dec. 1833, t. 3283.]

Cotton Manufactures in the United States.—The following paragraph went the rounds of the papers a few months ago. The picture is now changed.

There are now in the United States, 795 cotton mills, moving a capital of $40,714,984, and manufacturing yearly, 77,714,316 lbs. of cotton, or 214,882 bales. The number of spindles, 1,246,903; looms, 33,506; yards of cloth made, 230,461,900; hands employed, females, 28,927; males, 18,749; total, 47,676; pounds of starch used, 1,641,253; barrels of flour, for sizing, 17,245; cords of wood burnt, 46,516; tons of coal, 24,450; bushels of charcoal, 9,215; gallons of oil used, 300,598; hand-weavers, 4,760; total dependents, 119,626; annual value of cotton manufactures, $26,000,000; aggregate of wages paid, $10,294,445.

Tobacco for Ticks.—We should suppose the tobacco wash, in the following recommendation from the N. E. Farmer, should also be applied at the time of shearing:

Boil a small quantity of tobacco, perhaps what grows on one good thrifty stalk would be enough for half a dozen sheep, in so much wa-

r, as when it is sufficiently boiled, there shall two or three gallons of the liquor; let it be- me sufficiently cool, then open the wool along e centre of the neck and back of the sheep, d with a bunch of tow or some other spongy bstance put on the decoction until the skin comes thoroughly moistened therewith, and a short time the ticks will all be destroyed, nd the sheep instead of pulling out and wast- g their wool by fruitless exertions of self-de- nce, will become easy and contented, and ffer their fleece to remain to be taken off by e shears.

For many years I have taken this method ith my sheep, just before the time of their mbing, and have always found it to have the ired effect. I very much dislike the foolish ctices of smoking, chewing, and snuffing is poisonous weed, at least when no better ason can be given for so doing than fashion the force of habit; yet I annually raise a few ants for the benefit of my sheep, and would commend to every one who keeps these use- l animals to do the same.

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ternal Improvements, No. V. By F. To the Editor of the American Railroad Jour- nal, and Advocate of Internal Improvements.

Sir,—Animated discussions have at va- us times taken place, in relation to the par- ular plan that is best adapted as a general eans to promote and facilitate internal com- erce; and although systems have been ex- ined, and theories investigated, in the most id and elaborate manner, they have been frequently characterized by party influence, produce any other effect than that of ex- ing animosities to the prejudice of the true erest of the cause.

It is not believed that any one particular an can with propriety be recommended as st fit to subserve the general interest of the ntry. The circumstances which should ern the mind in the choice and adoption of h plan are principally of a local character, d entirely independent of general rules. nals, railways, turnpikes, have each their rticular province, their particular sphere of tion. Each, according to circumstances, pos- ses, relatively, certain capabilities and ad- ntages, for which it claims precedence over e other two; and for which alone it should selected as most likely to conduce to the provement of the section of country it may intended to benefit.

One of the main causes of error, and one at has been productive of more injury than y other, may be traced to the prejudice that s so unreasonably existed in the minds of the ple, against the employment of men of sci- ce in the construction of important public rks. It is disgraceful to find the interests men of this class, even when possessing a ge share of practical knowledge, prejudiced the very thing which ought, in the eyes of enlightened community, to have advanced em; to find their services slighted and put de, to give place to those who, professing to t independently of all theory and scientific nciple, and ignorant of every thing except few practical rules indispensable in their cations, happen to enjoy the unenviable dis ction of being mere practical men. It is ly by the lights of science that we can ever pe to estimate with any degree of accuracy e combined actions of different causes, and a correct knowledge of its principles that e can avoid making improper applications established laws, and be enabled to draw le- timate conclusions from particular premises. is not imagined by any reflecting person at knowledge of this kind can possibly mili- te against a correct conception of plans, and judicious arrangement of details. Were it asonable to suppose, even for a moment, the couragement of any such ridiculous notions, any convincing instances might be adduced evidence to maintain the contrary position, —that without its assistance no engineer can hope to attain to eminence in his profession. Prony, Tredgold, and Smeaton, were all, in some sense, practical men; but to an exten- sive practice they united a profound knowledge of all the different branches of mechanical sci- ence; and who have contributed more than they to the general diffusion of knowledge, under the different heads to which their atten- tion was directed. We are persuaded that it is only from the exertions of such men (and ma- ny such may be found in this country), that we can possibly escape falling into the snares that are laid by designing men to dupe the unwary.

So much has already been written on the relative value of railroads and canals, that the subject is indeed well nigh exhausted; and although little or nothing, it is believed, can be adduced further to strengthen our position, but what has been hundreds of times reitera- ted from every quarter of the Union, still it cannot be passed by, consistently with the ob- ject in view and in justice to the cause we up- hold, without a brief notice of some of the characteristics by which these formidable ri- vals, if such they must be considered, are chiefly governed. That of friction, as it has proved a fruitful source of disputation among theorists, claims particular attention, as the basis on which most of the arguments are founded; and although the experiments from which our information on this important topic is derived have been conducted with the great- est care and precision, the results differ so widely in character, and present so many ma- terial opposing points, that the laws establish- ed from the conclusions drawn from the one have ever been invalidated by those drawn from the other. It was long looked upon as a fundamental principle, that *the friction of roll- ing and sliding bodies was the same for all velo- cities*, and consequently, that any body being acted on by a constant force barely sufficient to overcome its friction, together with the re- sistance of the atmosphere, would, like a fall- ing body acted on by gravitation, proceed with a motion continually accelerated, and in- crease beyond any assignable limit. How- ever startling this assertion may have been at its first appearance, it yet found many to coun- tenance its introduction, and claim its admis- sion as a truth deserving unlimited credit. Here was a fine field for speculation; and to this apparent paradox may be traced the foun- tain head from which has emanated all the enthusiastic hopes and extravagant expecta- tions which have characterized the railroad mania during the last few years. Fortunate- ly, however, for the cause of science, men have been found sufficiently sceptical to question the truth of this absurd position. Morin, sat- isfied in his own mind, that his predecessors, Vince and Coulomb, had been laboring under the effect of some undefinable error, determined to sift the matter until he discovered the cause. Having prepared an apparatus for this pur- pose, he varied the velocity from the lowest up to ten feet per second; the rubbing surfaces from some tenths of a square inch to nearly five hundred square inches; and the pressures from ninety to twenty-five hundred pounds. All the experiments made within these limits, and they were repeated many times, agree in character, and prove, what is more consistent with our ideas, and reconcileable with our ex- perience, that the friction of surfaces moving on each other is *entirely independent both of ve- locity and surface, and proportionable to the pres- sure.* In this experiment, of course, the op- posing resistance of the medium through which the body passes is abstracted.

These practical results were still, however, highly satisfactory, as placing the ability to propel carriages on railroads at a suitable speed, for the more rapid dispatch of business, beyond a doubt; and as showing the striking relative difference in the force requisite to produce the same degree of speed upon canals. But be- fore going further, let us examine a little into the nature of this latter resistance. We find this to be governed by totally different laws: that it increases with the square of the velo- city. It is the resistance of the medium through which the body passes, and is occasioned by two causes,—the cohesion of the particles and the inertia of matter. Thus, if a body move through a fluid at different velocities, the resistance will increase with the increased number of particles struck in a given time; which, of course, will be determined by the space run through in that time. If, therefore, a triple number of particles be struck, the re- sistance will be triple; but it increases further with the force with which the body strikes the particles, and this being proportional will be also at a triple rate, making the whole resist- ance nine-fold: i. e., partly in the ratio of the velocity, and partly in the duplicate ratio of that velocity.

The only apology offered for these tedious and uninteresting details, is the circumstance of their being addressed to the unenlightened— to those whose occupations may preclude them from bestowing much care and reflection upon subjects of this character. It is a desideratum admitted by all who have the interest of the country at heart, that a correct knowledge of fundamental principles be so generally diffused throughout every class of society, that each and every individual member thereof may be enabled of himself to pass judgment on the relative merits and demerits of the various schemes presented for public approbation; and to detect the fallacies of those whose wilful misrepresentations have so often before led in- to error. Almost every instance that has oc- curred where serious injury has resulted from ill-advised and ill-concerted undertakings, has been characterized by a total ignorance of the commonest rules of hydro-dynamics. Many unhappy examples might be adduced to illus- trate this observation, but we forbear, in the hope that the experience derived from the past will so regulate the actions of the future as to render their recurrence, unless wilful, next to impossible.

But to return to our subject. It appears from the different nature of these resistances, that the rate of velocity on canals is confined to a very low limit, whereas the rate of that on railroads may be increased to any height that will not prove injurious to the road and car- riage. On the other hand, however, it is to be remarked that this very principle, which is harped on as an insuperable objection to the further use of the canal, actually endows it with advantages that are altogether unattaina- ble on railroads. We shall endeavor to ex- plain this in as few words as possible. The relative good effect produced at different veloci- ties, in round numbers, stands very nearly thus: One to three in favor of canals at a ve- locity of two and a half miles per hour; equal at a velocity of five miles per hour; and one to three in favor of railroads at a velocity of ten miles per hour. Now, reasoning from these pre- mises, it can be made to appear that a force of traction on a canal equal to one hundred pounds will be amply sufficient to move a mass equal to ninety thousand pounds. A horse travel- ling at the slow rate of two miles per hour can draw with ease thirty tons in a boat weighing fifteen tons. This gives us at once a proportion of one to nine hundred as the amount of re- sistance opposed to the motion of a vessel through the water at two miles per hour. Now, reducing this velocity to one mile per hour, the proportion becomes one to three hun- dred and sixty; and if to a half a mile per hour, one to fourteen hundred and forty; or, in other words, a traction equal in force to 100 lbs. can thus at that rate draw a mass of the enormous weight of 1,444,000 lbs. This as- tonishing fact does not only exist in theory, but has actually been proved in practice, upon our own lakes. A single horse has been known to draw, at the rate of one mile per hour, a raft weighing two hundred tons. F.

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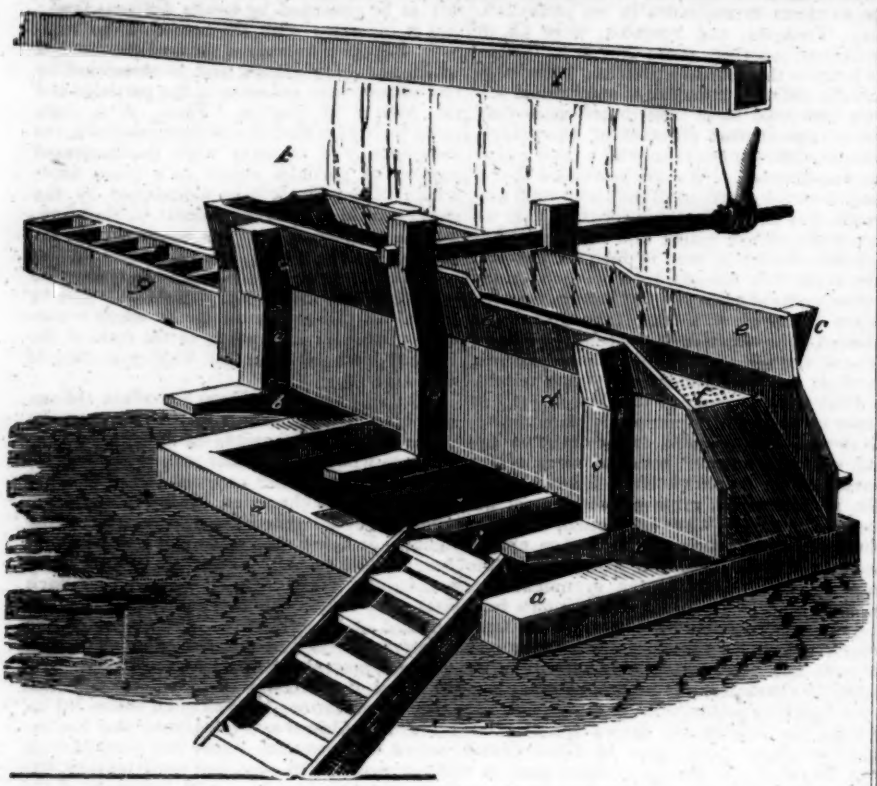
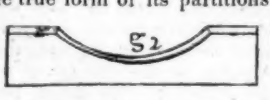


G. B. Palmer's Gold Washing Machine. By J. STICKNEY. To the Editor of the Mechanics' Magazine.

DEAR SIR,—Accompanying this rude sketch of a Gold-Washing Machine I also send you a few remarks, which, from various circumstances, will of necessity be still more crude and hasty.

REFERENCES.—*a a*, parts of a horizontal frame, 5 feet long, 3 wide; *b b*, rockers supporting the trunk of the machine; *c c c*, posts inclosing the trunk; *d*, trunk in which the rippler is secured, 7 feet long; *e e*, sloping sides of the box; *f*, cast iron plates, 5 feet long, 15 inches wide; *g*, the rippler, partly drawn out; *h*, outside rippler, stationary; *i*, a box, conveying the water to the outside rippler; *k*, the head, or feeding place; *l*, water conductor. The rockers are shod, and stand on plates of iron; a bolt fixed in the sill passes into a hole in the centre of each, to keep them from slipping. The sill of the centre frame, (to which is fastened the handle,) continues beyond the post, and, when the machine is in operation, beats upon two irons on the lower frame, to give motion to its contents. When washing, the rippler is locked up in the body of the trunk, and not seen; the true form of its partitions is seen



at *g* 2. The machine is "fed" at *k*, and the stones, &c. discharged at the sloping end; the gold and sand having passed through the plate, *f*, into the rippler which contains mercury, if any gold escapes the first ripple it is supposed to be caught in the one outside.

The gold mines of this country may be divided into those of *vein*, *surface*, and *deposite*. The first have a great diversity of appearance; in some of them the gold is imbedded in pure white quartz rock, and often visible to the naked eye. Of this kind is at least one vein at Carroll county, Georgia. Others in white and red sand stone, (the King's Mountain mine possesses masses of pure white stone, which is so friable as to crumble to fine sand between the fingers;) some in sulphuret of iron, in different stages of decomposition, (of this kind is an extensive vein at Narcoochly Valley, in Georgia;) others in the oxides of iron, or ochres. Sometimes it appears in dark spongy masses, the gold tipping the edges, and points of the structure in such manner as to resemble the small flowers of lichens. In some mines a dark, porous, and vitrious substance is exhibited, impressing the idea that the mass had been suddenly cooled when in extreme fusion. In one specimen from South Carolina the gold is disseminated in small particles through a rock, resembling fine variegated marble; as it does not contain lime, I presume it a species of slate. Another, which I obtained at the celebrated Duncan vein, (No. 1052 of the Georgia Lottery,) has particles of rich gold embedded in strata of slate, or rather of slaty structure, unctuous, of pearly lustre, and somewhat resembling stratite.

These veins are of various widths, from a few inches to that of several feet, but I believe little is known as yet respecting their length or depth. They are usually inclined upon one side, or are said to dip, the angle of which varies from that of nearly a vertical position, to more than 45°.

In places where the soil has been washed from the sides of hills, these veins of quartz, of various sizes, are seen traversing the micaceous slate, or gneis, and, as it may be presumed that some of these small as well as large ones contain gold, it may not be unreasonable to account for the *surface* and *deposite* mines, by supposing it to be disintegrated from its natural bed by the effects of frosts, atmosphere, water, &c. Veins thus broken down, and the gold disengaged, will constitute what is called *a surface mine*; one of this kind before the door of a neighboring dwelling is now being operated upon, worth from two to three dollars per hand, per day, which has been trodden under foot for thirty years. From these *surface mines* the gold (being assisted by every shower that forms a rill) finds its way to the beds of the streams, and is deposited as soon as the gravity of each particle overcomes the force by which it is impelled forward; being heavier than other substances, and by the constant changing of the beds of the streams, and other causes, it finds the lowest situation in the deposite, that is, next to the slate, which arrests its downward progress. Next in specific gravity is the quartz and iron rocks, which are also found resting on the slate, and are covered by various strata of other soils, from the depth of from one to thirty feet; and as the constant deposition of gold may be supposed to be going on by fresh accumulations from the surface, and particles disengaged from fragments of rocks by attrition, in their way downward, and as the progress of these *particles* is in some degree impeded by the firmness of this quartz strata, we are enabled to account for their being diffused through this mass generally.

I should not thus gravely attempt to account for "*gold in deposite*," was it not that we have philosophers who assert that it *grows*—that new creations of the precious metal are afforded "day by day;" and others, that those streams *were its natal beds*, and it has remained here since the creation; while others say that an eruption of the mountains at some distant period had ejected forth a golden shower, of which we are now reaping the harvest.

The first object of the operator on a deposite mine is to ascertain its value, for which purpose he usually proceeds in the following manner: He finds the depth of the "grit," or quartz deposite, by forcing down a slender iron rod. If not too deep, he excavates the soil in pits or ditches. When reaching the grit he washes a small quantity, and proceeding through that strata to the slate, tries it again by washing, and if from these results in several places he forms a favorable opinion, he sets about preparing the mine by cutting ditches for the streams, and others for draining the mine, which sometimes are necessary to be twelve or fourteen feet deep, and of great length. His supply of water for washing must be brought in in small canals six or eight feet above the surface of the mine, and often times the fountain must be sought a mile or two from the place of operation. The next thing is to place his machine, or rockers, where they will be most convenient for the plan of his future operations; he then clears a pit ten feet wide, and from ten to one hundred and fifty yards in length. As soon, however, as a portion of the grit is laid bare, a number of the hands are employed in raising, and others in wheeling it in barrows to the machine, where one is employed to fill it, one to move it, one to cast away the cocks when washed, and perhaps another to keep the outside rippler clear from sand. The grit being placed in the machine, (which in some respects resembles a family cradle,) and agitated from side to side under the streams of falling water, washes the gold and sand through the cast iron plates into the inside rippler containing mercury, where, by

the strong affinity or attraction which exists between the mercury and the gold, the latter is secured, while the sand is washed away. When the day's work is finished the rippler is drawn out, the gold in amalgam washed and secured, and the mercury expelled by heat. It is then sent to the refiners, where all foreign substances (silver excepted) are destroyed by the different agents employed in this fluxes, and (if correctly refined) valued accordingly, the quantity of silver in different mines is supposed to vary from two to forty per cent.

Machines of various constructions have been used in collecting the gold, but the one here represented has mostly taken the place of all others among regular miners. It was invented and patented about three years since by Mr. G. B. Palmer, of Spartanburgh, South Carolina, whose experience in mining enabled him to embrace in this simple form every requisite principle for effectually collecting the fine as well as coarse particles of gold. His price for rights amounts to a mere compensation for his expense and labor in perfecting his improvement.

We fear that the richest mines in this vicinity are mostly wrought out, and that we shall soon begin to feel the effects of the "*removal of the deposites.*"

Most respectfully, yours, &c.

J. Stickney.

Columbian Straw Cutter.—Noah Davis, of York, Livingston county, has exhibited a machine in this village denominated the Columbian Straw Cutter, patented to Amos Russell and himself on the 19th of November last.

Several hundred people examined the principles of the machine, and saw it operate in cutting straw, hay, &c., and almost without a dissenting voice pronounced it the best machine for cutting fodder that they had ever seen.

That the public may have some idea of this machine, a partial description of it is given:

Three knives (more or less,) say twenty inches in length, are placed upon a cylinder diagonally, by means of screws—the cylinder is about 20 inches in length by 28 in diameter, which is placed on a frame in the manner usual for hanging a grindstone—on a bar of wood, across the rear of the frame, is placed a thin plate of steel, upon which hay, straw, stalks, or oats in the sheaf, are cut by the passing knives, which come in so perfect, though tight contact with the steel, as not to admit of the thinnest leaf of straw, though alone, to escape uncut. The straw, &c., is carried to the cutting point in the manner that wool is fed into a machine for carding.

The cut may be altered to any length required in three seconds of time, from one-fifth of an inch to an inch or more. A hopper is also placed upright over the summit where straw, &c. is cut, similar to that already described, but is not considered any better, except for cutting ears of corn to short pieces, say half an inch or an inch, which it will do square across the cob at the rate of about a bushel of ears in a minute.

And as people generally suppose this must be hard hand labor, it may be observed that as the cylinder is large, and covered with three inch heavy staves, it not only supersedes the necessity of a fly-wheel, but gives power at the point required, and the knives being placed spirally on the cylinder, and under quick motion, the corn may be cut as above stated by the power of two fingers. All fodder cut is carried into a box beneath.

The knives, by means of the screws which attach them to the cylinder, are set more or less close to the bed shire or steel, almost as easy as the length of the cut is regulated.

To shift from hand to any other power, nothing is necessary but to attach a band or belt to a pulley placed on the end of the shaft instead of a crank.

Any person wishing to take an interest in this improvement, may have a shop, town, county, or state right, on reasonable terms, by applying to Noah Davis, of York, or may have town or county rights by applying to Thomas Williams, of Waterloo, or Philander Denslow, or George W. Huntoon, of Syracuse, Onondago co., his agents.

The machines will be manufactured by Joseph Hall, in Rochester, of whom they may be had on short notice.

Printers who are in favor of agricultural improvements are invited to insert the above. [Genesee Farmer.]

Grafting.—The usual mode is to cut off the stock, limb, or whatever is to be grafted, pare the stump, split it, and prepare a scion by forming the butt of it wedging, to suit the split, having care that the part that sets in the rind of the stump is thickest. I will notice a misconception here. The idea is, that the two barks take first; nay, that the bark is all that unites; that as long as the two barks fail to unite, the scion must fail to start. This is not a fact: it is the circulation of the sap in the wood that supports the scion, while there is little or none in the bark. Try the experiment on any tree: by beating off its bark you can start no sap. Cut a little into the wood, and the sap will immediately flow: hence it is, the grains of both woods being equally open, that the flow of the sap in the stump passes into the scion, and the air being kept out, that the scion is supported. Thus it is necessary that the scion be taken down equally on both edges, so as to come in complete contact with the stump. It may be observed, that the two barks never unite until the scion is swollen, and often full leaved. The bark inevitably shrinks and dies at the wound on the outside, and grows anew before they can unite. The idea that the wood does not unite is erroneous. I have examined them, and have found that both the wood of the scion and the inoculated bud early and closely unite. Thus it is necessary that the two woods be placed fairly together in both cases. I have a new method, to me, of grafting; that is, to take away the earth from around the stock, make an incision near the root, with a sharp knife, downward, inclining a little in, so that the lower part will be a little within the bark. I take a scion, and slope it from one to one and a half inches, wholly on one side, bringing it perfectly to a point, having care not to start the bark. I then take a little of the outside bark from the back side of the lower end of the scion, leaving it a little wedging at the extreme point. In this form I thrust my scion fairly to the bottom of the incision, and then bring it snug to the stock, binding it with coarse strong yarn. I then replace the earth, covering the whole a few inches, with nothing more applied, leaving the scion out in proportion to the length you may choose to have it. As this was an experiment with me, I varied much in the length of the scion, and found no detriment from either extreme. In this experiment I was successful beyond my expectations: for it seemed to be a blind work. I think I set forty or fifty scions in this manner, and I do not recollect of any one failing or faltering in the least. The old stock should be cut away as soon as the scion is well united and growing. I put frequently two to a tree, and cut away some of the inferior ones. These grafts continue to thrive as well as any set in any other manner, and all the reason I can give for not practising this mode is its being more slow. It is a sure and a simple way of grafting, and may be recommended especially to those who are timid about cutting off a tree to graft, having a distrust of their ability in the art of grafting; or to those that have but a few trees and do not value a little pains. This mode is applicable to other fruit, as well as apple trees. I recollect I have a thrifty plum tree grafted in this manner, in a wild red cherry stock of three years' growth. I will observe that the yarn bound round for the benefit of the scion needs no loosening, it rots sufficiently fast. All the advantages and disadvantages taken into view, I think this mode can be recommended, for grafting at the ground, above any I am acquainted with. Yours, very respectfully, Abednego Robinson.—[Northern Farmer.]

Injury to Fruit Trees by Mice.—While on this subject I will say, I have lost many valuable trees, both in my nursery and young orchards, say one thousand, by the noted severe winter; and, this is not all: I have suffered the loss of hundreds by the depredations of mice. I have ploughed my ground partly with the view to ward off this evil; but they have lodged under the furrow, and have occasionally walked into my nursery, and destroyed many of my trees the past winter. My loss within a few years at least is $500. This way of losing property is very aggravating. It seems to be too much to bear with, from such a race of insignificant beings, without hope of remedy. Can there be no means devised to conquer and destroy this mischievous race, within the limits of reasonable expense? Our nation suffers the loss of millions of dollars annually, by these enemies; and yet there seems to be no inquiry as to any means of destroying them.—[Northern Farmer.]

Value of Agricultural Papers.—There are now not less than five periodicals, devoted to agriculture and gardening, published in the state of New-York. These are all well conducted and highly valuable publications. Their prices vary from $3 to 50 cts. per annum, so that agriculturists in that state, both scientific and practical, may be furnished with publications, either monthly or weekly, according to their taste. New-York is in advance of any other state, in relation to the number of her agricultural periodicals. These will no doubt have a favorable influence on her farming interests, should they be well sustained by the public. Each state should have at least one agricultural periodical; and no matter how many more, if all can be well sustained.

It was recently estimated, by a very intelligent gentleman, who was a close observer of the causes and means of valuable improvements in husbandry, that one thousand copies of a well conducted agricultural paper, well adapted to the modes and subjects of culture in New-Hampshire, if properly circulated and read, would add, at least, ten thousand dollars annually to the agricultural products of the state. Citizens of New-Hampshire, do you believe this? If you do, follow the example of the patriotic citizens of New-York, so far at least as to sustain a single publication devoted particularly to your interests, within your own state. Cresinus.—[Northern Farmer.]

Raising Wheat.—[From the Maine Farmer.]—Mr. Editor: A piece of land lying in Dixfield village, owned and improved by Mr. C. T. Chase, after being improved as a pasture some years, was ploughed up three years ago last summer and sowed with rye, without manure and without grass seed. The crop of rye was rather small. The spring after the rye was taken off, the stumps were taken out, the

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land ploughed, and manured with about a dozen loads of leached ashes to one acre and one-eighth of an acre. It was then sowed with wheat and clover seed. The produce was twenty-six bushels. The same fall, after the wheat was taken off, the clover, which had taken well, was ploughed under, and the succeeding spring (which was the last) the land sowed with wheat without any manure. The product of this sowing was forty and a half bushels, measured after it had been passed through the cleanser at the flour mill in the village. Mr. Chase thinks that the crop might have been injured from three to five bushels by cattle which broke in while the crop was growing. If we add three bushels, the smallest quantity mentioned, to the forty and a half bushels, we shall have forty-three and a half bushels of clean wheat from one and one-eighth acres. Deduct then from forty-three and one-half bushels, one-ninth part for the eighth of an acre, and you will have something over thirty-eight and a half bushels to the acre. Is not this doing well? J. H. J.

Peru, March 17th, 1834.

PEAS.—Farmers of Great Britain have ascertained, by many years' experience, that no other fallow crops leave the ground in a situation so favorable for a crop of wheat, as leguminous vegetables. At the head of this class may be ranked the pea. "To fallow, and at the same time, to have a shading and ameliorating mild crop growing on the fallow," is the system pursued by the best farmers of that country.

Lime in the soil is considered indispensable to produce this pulse in perfection, and where it does not exist in sufficient quantity, the application of gypsum will be found very beneficial. Nearly all our western lands contain a portion of calcareous matter, which is evidenced by the abundant crops of wheat. As far as my experience goes, no other crop so effectually subdues and pulverizes a heavy clay soil, as peas. On such soil, fall ploughing is necessary. Early in the spring roll and harrow, then sow two and a half to three bushels of peas per acre, and cover with the cultivator. When the crop comes off, the ground will be found remarkably mellow, and once ploughing will put it in fine condition to receive wheat.

By this management, I have raised twenty bushels of peas per acre, and my wheat on the pea ground was the heaviest on my farm. In England it is not uncommon for a large farmer to have 50 acres of peas, and they find them the most valuable crop for several kinds of stock. Some farmers may say they cannot raise Indian corn in England, and are compelled to fatten their swine with peas. To such I would remark, that a bushel of peas is worth more than one of corn, to bring hogs forward early in the season, and is raised with half the labor. I begin to feed my hogs with peas as soon as they are too old for the table, and find that all is greedily devoured but the straw. I never had hogs to thrive so rapidly on any other kind of food. Corn is indispensable in the latter part of the season to give solidity to pork, but if we were to plant less corn, and sow more peas, we should be gainers by the change.

A celebrated writer on agriculture says, "A crop of peas is so far from exhausting the land, that it may be considered as an excellent and ameliorating manure." Another writer says, "Various crops pulverize the soil, and to a great extent prepare it for different crops. *Peas*, for instance, are peculiarly calculated for preparing the ground for *wheat*."

The bug (Bruchus pisi) punctures the pod when very young, and deposites an egg. Very few crops escape them, except such as are sowed after the 10th of 6th month (June.) It will therefore be best for every farmer to sow a part after that time for seed, or to keep a sufficient quantity over one year. The last method I have found effectual. If, however, the farmer cannot procure seed clear of bugs, let him heat water in a large kettle, and dip the basket containing the seed into the water when in a boiling state; keep them in *not more than one minute*, then throw them on a floor and strew on plaster.

I have sowed the small yellow pea, and the marrowfat, but if I could obtain them in sufficient quantity, I should much prefer *Bishop's new early dwarf prolific pea*, which I have found in my garden to be the most prolific variety. It seldom attains a height of more than twelve to fourteen inches, and is of fine flavor. When in blossom they present a beautiful appearance. —[Genesee Farmer.]

TAR ON SHEEP.—If you are apprehensive lest foxes should take unwarrantable liberties with your lambs and geese, you will rub a little tar on their necks, and it is said neither foxes nor wolves will attack them, as those marauders cannot endure the odor of tar.

FAMILY ALBUM.—We were not long since informed of a practice observed in the family of an excellent widowed lady of this city, which must be of great utility to her children, and which we venture to recommend to the readers of our paper. A folio, if we mistake not, is provided as a place of deposit, into which each member of the family is required to put once a week a piece of written composition, upon any subject that may suggest itself to the mind of the writer. Saturday evening the budget is opened and each piece read, criticised, and amended, in the presence of the family. It is impossible to calculate the advantage to be derived from such a practice, by establishing in early life habits of investigation, and mental improvement. The mother who thus educates her children, may sanguinely anticipate a maturity of usefulness and respectability. Degrading profligacy and low vice can have little to tempt a mind thus early shielded by lessons of purity, domestic happiness, and pleasant fire side instruction. Give your children an early love for books, refine their taste by works of art, set them an example of religious excellence, of correct manners, and endeavor to make the domestic hearth always attractive, and you bar up all the great avenues to immorality.—[Portland Courier.]

STEAM-DIGGING MACHINE.—M. Wronski, a celebrated mathematician at Paris, has, according to the Paris papers, discovered a new system of applying steam to carriages, digging machines, hoes, picks, ploughs, &c. so superior to any thing hitherto known, that a French company has bought his patent for four millions of francs.—[Le Temps.]

INGENIOUS CONTRIVANCE.—I wish, through the medium of the Centinel and Palladium, to notice a neat and economical improvement made by Mr. Currier, of this city, respecting bells for houses and hotels. Heretofore there have been separate bells for each apartment. These have been numbered to indicate the apartment where an attendant was wanted. In large establishments numerous bells are necessary, and these are costly, and sometimes not useful if the bell had ceased to sound before it was looked at. In the invention *a single bell is sufficient for the largest hotel.* The wire from each apartment, while it rings this common bell, communicates motion to a suspended ball over an appropriate number, and its long continued vibrations give, without fail, and without noise, the information that is desired. The expense is comparatively trifling.—[Boston Centinel.]

IMPORTANT DISCOVERY.—We are informed by two gentlemen who lately passed through Syracuse, N. Y., that Mr. Avery, the proprietor of an extensive iron foundry in that place, has made a very important discovery in relation to casting of iron. The best kind of earth used in foundries is brought we believe from Canada. Mr. Avery analyzed this earth, and found it to contain a certain portion of blue clay. Following this up by a series of experiments, he discovered that if *common fine sand* was mixed with *common blue clay*, in the proportion of one tenth part of clay to nine tenths of sand, it would constitute the best possible composition for casting that he had ever used. Even the most delicate castings came out perfectly free of sand, and required no sort of cleaning by vitriol. He dismissed ten of his cleaners on the spot. Mr. Avery has taken out a patent for his discovery, and estimates that his composition will make an immense saving in the expense of iron foundries—in the diminution of labor, the cheapness of the sand, and in the disuse of vitriol in the process of cleansing. We hope that our neighbors of the furnace will immediately test it by experiment.—[Brattleboro' Independent Inq.]

DR. MAJENDIE'S OBSERVATIONS RESPECTING THE PULSE.—Majendie has given a scale of the pulse, which shows that the difference in frequency between that of the infant and the aged is more than double. The scale is, at birth, 130 to 140 a minute; at one year, 120 to 130; at two years, 102 to 110; three years, 90 to 100; seven years, 85 to 90; fourteen years, 80 to 85; adult age, 75 to 80; first old age, 65 to 75; confirmed old age, 60 to 65.

THE NUMBER FIVE.—The Chinese have a great regard for this number. According to them there are five elements—water, fire, metals, wood, earth; five perpetual virtues—goodness, justice, honesty, science, and truth; five tastes—sourness, sweetness, bitterness, acidity, and salt; five colors—azure, yellow, flesh-color, white, and black; they say there are five viscera—the liver, the heart, the lungs, the kidneys, and the stomach. They count five organs of the senses—ears, eyes, mouth, nose, and eyebrows. A Chinese author has written a curious dialogue between these senses. The mouth complains that the nose is not only too near, but above her; the nose in reply defends its position, by stating that but for it the mouth would eat stinking meats. The nose in turn complains of being below the eyes; they reply that but for them men would often break their noses.—[Le Lanterne Magique.]

CURIOUS ASTRONOMICAL THEORY.—We state the following on the authority of M. Arago, an eminent French astronomer: If we place in a horizontal line the series of figures of which the law is evident—

0 3 6 12 24 48 96 192

(each double the preceding,) and afterwards add 4 to each, we shall have a series denoting the relative distances of the Planets from the Sun, thus—

4	7	10	16	28	52	100	196
Mercury.	Venus.	Earth.	Mars.	•	Jupiter.	Saturn.	Uranus.

If 10 represents the distance of the Earth, 4 will be that of Mercury, 7 Venus, 16 Mars, and 52, 100, and 196, the respective distances of Jupiter, Saturn, and Uranus. This law was known as far as 100, before the discovery of Uranus: and the distance being found to correspond, affords a very remarkable confirmation of its truth. But it will be observed there is a deficiency of one term between Mars and Jupiter. This led philosophers to suspect the existence of a planet at the distance required to fill up the vacancy; and in 1801, Piazzi, of Palermo, actually discovered one, whose orbit was between those of Mars and Jupiter, and nearly at the proportional distance of 28 from the Sun. This planet was named Ceres; and since that period three others have been found —Pallas, Juno, and Vesta—all of which have their orbits so near each other as to lead astronomers to believe that these are the fragments of a larger planet, which had been shattered into pieces by some internal explosion, or the shock of a comet.—[London paper.]